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PRINCIPAL CONTENTS.

American Railroad Journal.

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Saturday, October 12, 1850.

Illinois.

Alton and Sangamon Railroad.

After a lapse of some twelve or fifteen years, projects of internal improvement are again engrossing the attention of the people of Illinois.—The first settlers of this State, with their other ideas, carried with them to this, all the internal improvement spirit of the older States; and almost simultaneously with the formation of a State government, they formed magnificent projects of internal communication, such as would have done credit to the oldest and wealthiest States, and proceeded at once to the execution of these projects, entirely regardless of the want of all the conditions necessary to success. The remarkable speculative movement of 1835–6 happening at this juncture, supplied the means to commence their projected works. The result was what we now see was inevitable. With a very sparse population, without means of their own, without experience of, or population to support, these works when constructed, as soon as the revulsion which succeeded the movement we have spoken of, deprived them of the means from abroad to carry them on, the whole fabric fell at once to the ground. Long lines of work designed for railroads were abandoned, some of which are now so covered with forests, that scarce a trace of them remains. Not a single one of the many schemes has been realised, save the Illinois and Michigan canal, which after remaining for years in an unfinished state, was finally completed by the aid of the foreign bondholders, in hope of saving a portion of former advances. Everything else fell in the general crash, and as far as the State was concerned, the future prosecution of these works was utterly abandoned.

The revulsion in the popular mind of the State was as violent as had been witnessed in the commercial world. From one pitch of extravagance the people of this State were led to another almost equally absurd. Their disgust at their ill success was only equalled by their former improvidence. They were as heartily sick of what they had done, as was the foreign capitalist whose money had been squandered. To prevent the possibility of the renewal of a similar state of things, they prohibited themselves, by a new constitution, from again engaging in their capacity as a State, in the construction of any works of internal improvement.

Since all this took place, the condition of things in this State has entirely changed. From 300,000 or 350,000 inhabitants in 1835, she now numbers 1,000,000. Her wealth has increased in much greater ratio than her population. Large commercial cities have grown up. Chicago, then a wilderness, now ranks as one of the important cities of the Union, and numbers 30,000 inhabitants.—The State now raises a vast surplus for export. Large and flourishing towns now exist in every part of it. No other State is increasing so rapidly, all things considered, and none possess such elements of future greatness.

Under the present condition of things, her people now feel the necessity of introducing among themselves all the improved means of locomotion which science has provided, and which are in use in older communities. Her vast surplus brings but half price for want of means to send it to market. The business community feels the need of better means of travel than the soft prairie soil supplies. The State, extending some 400 miles in a northerly and southerly direction, interposes herself between a majority of the Atlantic States and the Mississippi. For the want of a railroad, or good ordinary roads, that part of the route from New York to that river, lying in Illinois, is more dreaded than the whole distance from that city to Chicago. The time has come, therefore, when the construction of railroads in this State is warranted, not only as offering a profitable investment of capital, but as demanded by the business wants of the country, precisely as is the construction of steamboats on the Mississippi river; and those now engaging in their construction are proceeding upon the same principles that prudent and cautious men observe in engaging in any other legitimate pursuit. In other words, they undertake these works because they promise a better return upon capital than any other. This return may to be sure be made up in part, in the increased value given to their property by these works. There can now be no doubt whatever that money in Illinois can be more profitably employed in the construction of railroads than in any other way.

The new impulse given to these works, therefore, is based upon substantial grounds. They are commenced and prosecuted as any other regular business transaction to make money. Their construction will be governed by similar rules that control all kinds of business; and under their application their progress will proceed safely and surely. This, like all other kinds of business, may be overdone, and subject to the revulsions which seem to be a necessary law in every kind of business; but under the guidance of self interest, they will be as free from these revulsions as any other pursuit. While all this is true, it is equally so that no State in the Union offers such inducements to railroad construction as this—none in which they can be constructed so cheaply, and none where the country will supply a larger amount of traffic. Through it must run a number of parallel lines, which will be the great thoroughfares for a large part of the Union.

Some of these lines that the State was unable to complete, and consequently abandoned, private enterprise is now re-commencing. One of the most important of these, is the *Alton and Sangamon railroad*, extending from Alton to Springfield, the cap-

ital of the State, a distance of 72 miles. This project, which has remained in abeyance since 1836, has been resumed under new auspices, with an energy and vigor, that promises to complete the whole line in about two years from the time of commencing the work. Such balance as was necessary to secure the construction of the road, which could not be obtained in Illinois, have been provided by subscription of New York capitalists to the stock. These have been made as an investment of capital. The amount taken here is about $200,000. A majority of the directors also reside here. The President of the Board is H. A. Coit, Esq., whose connection with this work is a good pledge not only of the profitableness, but of the success of the undertaking. The company is also largely indebted for its present success to another of the New York directors, through whose efforts the necessary means was provided, and the construction of the road resumed.

The final completion of this enterprise will exert an important influence upon other lines of railroad to be built in this State. Springfield is nearly on a line between Alton and Chicago; and the completion of the road to Springfield will be the signal for the extension of the line to meet the road now in progress from Chicago to Lasalle. These will constitute a direct route between Alton, St. Louis and the lakes. A rival to this line must be one that follows the same track. From Alton to Springfield it will constitute the main trunk line of the Northern Cross Road, which, by the terms of the sale of the State improvements on this line, is to be commenced next year. In this connection we would suggest that the Alton and Terre Haute road might use the whole or part of the Alton and Sangamon, and save the construction of a considerable extent of road. Such a connection would at present answer every useful purpose, till the former company shall have sufficient means for the building of a direct line. If Springfield should be too far north, the above road might intersect with the Alton and Sangamon, at *Carlinville*. This detour would add but little to the distance of the road from Terre Haute to Alton, and should be encouraged by the Alton people as tending more certainly to secure to that city the trade of the section thro' which it will run.

We do not know of a proposed road in the State which occupies a better line. It will connect the capital with the Mississippi by the shortest practicable route. It penetrates one of the most fertile, and the most densely inhabited part of the State. In addition to the advantages it will confer upon the section traversed by it, its completion will add so much additional means to the State, to be available in the opening of new lines.

From the Baltimore Patriot.

Baltimore and Ohio Railroad.

The following article on the Baltimore and Ohio railroad, from one who has taken pains to make himself personally acquainted with what he writes, will be read with pleasure by all who are interested in that great work. It explains systematically and clearly the present situation of the road, and the progress which is making in its extension to the Ohio river, and points out the important results which must follow its completion.

BALTIMORE AND OHIO RAIROAD.—ITS EXTENSION WEST.

Messrs. Editors—Holding, as the Baltimore and Ohio railroad does, a leading position among the public works of the United States, and as it appears to occupy an engrossing share of attention with the Baltimore community, your readers may regard with interest a communication descriptive of the new work.

The railroad in reaching its present terminus at Cumberland, traverses 179 miles; and overcomes in this distance an elevation of 600 feet above tide level at Baltimore. The extension commences at the Cumberland depot, and sweeping around and through the city to the northwest, strikes at once again for the left bank of the north branch of the Potomac. Thence availing of the Potomac valley the general direction is to the southwest as far as Savage river, 29 miles from Cumberland; and from that point, with a few deviations, nearly due west to Kingwood, thence northwest to the Ohio, and north to Wheeling.

The first work of importance upon the line is the Cumberland Viaduct. The grade at this point of the road is considerably above the grade of the streets across which the track is to pass. This fact coupled with a desire uniformly manifested by the engineer direction of the company, to embellish as well as subserve the more substantial interests of the contiguous country wherever the pecuniary interests of the company are not to be compromitted —has substituted for a plain bridge, of unimposing dimensions, over Will's Creek (a tributary to the Potomac from the north) this superb viaduct.

The viaduct starts from about where the track meets the bridge lines, and spanning the intermediate streets, Church and Mechanic, abuts at the west end upon the base of Academy Hill. The entire length of the structure is 859 feet—the first 315 upon a gentle curve, and the remaining 644 a tangent. This length is distributed between 14 arches, 13 piers, and 2 abutments. The arches—with a span of 50 feet, rise of 13½ feet, and soffit width of 18½ feet—spring from piers, the 8 in Will's creek each 24½ feet in transverse length, 6 feet in width, and from 5 to 11 feet above the bed of the stream, (with suitable foundation courses underneath) and the 5 on firm ground, 18½ feet long and 8 feet in width, and heights varying with the ground. The water piers have rounded ends presented to the wash of the stream, the starling roundstones starting from the foundation offset, and ascending in semicircular courses to the chord lines, and there capped by one large stone projecting over the courses below, and at the top cut in batter. The eastern abutment is 26 feet in length, and nearly 20 feet from ground line to the coping top; and has upon each side two pilasters, projecting 4 feet from the wall, with a thickness of 2½ feet. The western abutment is 39 feet in length, and in other respects similar to the eastern.

It will be at once perceived from the relative proportions of the span and rise of the arches, that each arch nearly approaches elliptic in section, each half arch being struck from three centres, with radii successively of 8·9 feet, 21 feet, and 45 feet. To the professional eye, the effect is exceedingly light and neat; and the more uninterested observer can hardly fail to appreciate the expedient adopted to preserve the grade and allow ample waterway for the stream, without sacrificing architectural symmetry. Although a portion of the viaduct is upon a curve, the dimensions of the curve are still such as to allow each arch to be set upon the chords of that curve—thus avoiding askew arches. The arches, now in course of erection and approaching completion, are laid upon centres so contrived, that as fast as one arch is turned, the centre may be removed to another arch; seven centres thus answering for fourteen arches—an important consideration in view of the cost of centre supports. The four parallel spandrel walls, which, with the arches, are of brick, rise with a batter so described, that while their combined bases shall cover the arch, to distribute the weight in due proportion, each spandrel wall shall also have on top a bed for the coping 2½ feet across—thus going up with sides continually changing in surface as the arch rises and wall batters; and presenting to the eye from above, a constantly winding surface. The outer spandrels are of course carried up in a vertical line. Crop walls ascending, within, from the pier head to the road bed, unite the interior walls, giving solidity to the structure. The thickness of the ring courses of the arches is three feet; and the total rise from the bed of Will's creek to the coping, which is to be cast iron, is nearly 30 feet.

The work has been carried up under careful and skillful superintendence, in a manner to challenge comparison with any similar work in the country. It is an ornament alike to the city and the road.—The engineer officer particularly in charge, is Mr. Walter Smith, resident engineer.

Crossing Will's creek by this viaduct, the road is intersected by the track of the Maryland Mining company, on its way to the Canal basin. This passed, Academy Hill, proper, is penetrated by a through cut, in places of 45 feet cutting. Thence taking a southwesterly course, the road strikes the North Branch, within one mile from Cumberland, passing through broken ground on the spurs of Will's mountain, by heavy side cuttings in rock, comes out upon a fine tract, called from its length, the Four Mile Bottom, beyond the little village of Cresaptown.

Passing through the Four Mile Bottom, the road next strikes heavy ground at the foot of Fort Hill —a singular mountain formation independent of the two parallel ridges, Will's mountain and Dan's mountain; and after hugging the hill side for some distance, shoots out in a rather abrupt curve thro' rock cutting into another bine bottom tract, the Black Oak Bottom. Passing this bottom, the road is cut alongside of a bluff known by the local names of Cedar Point and Chimney Hole Rock, the last being tunnelled by a short excavation, fourteen feet by fourteen, to allow vent to a small stream otherwise obstructed by the embankment. From Chimney Hole Rock, the road crosses to an island in the Potomac, and continuing up this island about an eighth of a miles, again takes the Maryland shore, diverting the river into the right hand channel by a heavy embankment. Thence through some two miles of bottom and a few hundred feet of heavy cutting, the road again strikes the river about 21 miles from Cumberland; and here passes into Virginia. The bridge at this point, probably from the low grade taken to reduce embankment upon the long stretch of bottom land in the vicinity, and also from the nature and comparative scarcity of suitable stone, is to have a wooden superstructure.—There are two abutments and one pier, each span being 156 feet. The dimensions and details of the masonry, and character of the superstructure of this bridge, are not at present known to the writer —to his regret—for a new principle, or combination of principles, it is said, will be introduced in the work, which will render it one of much interest in a mechanical view. The construction is being rapidly pressed forward, under the direction of Mr. Henry Blackstone, the engineer in charge.

On the Virginia side of the river the features of the country remain the same. After three miles of light work, the road reaches New Creek, a stream from the southward draining, on the one side the Knobly spurs, and on the other the continuation in Virginia of the Maryland Dans' mountain. New creek is crossed by an iron bridge laid upon two abutments, and three piers 25 feet apart; the material of the stonework, a blue limestone, qarried near by. The Paddytown (a name notwithstanding its associations, a little classical in the past history of the country) depot will be located near this bridge. This depot, in furnishing the most accessible point to the larger parts of Hampshire and Hardy counties, will be a place of note in the thriving trade which the completion of the road is destined to draw from the upper Virginia counties to the Baltimore market.

From Paddystown, the road runs westward upon a tangent of nearly two miles over very favorable ground, and meets the Dan mountain range at Thunder hill. Here the road rises above the Cumberland limestone formation and strikes the upper strata of the old red sandstone. Thunder hill is turned by hillside cutting, and after three miles further of bottom and hillside, and in 27 miles from Cumberland, the road is opposite Westernport, a small town in Maryland at the mouth of George's creek. And here is tapped the great coal basin.

A short distance above Westernport, and on the Virginia bank of the river, the company have purchased a convenient tract for depot purposes. The depot buidings (and they are to be erected forthwith) will be of considerable size to accommodate a large extra force of locomotives with reference to the heavy summit grade which commences at about this point. The road here is 17 miles from the summit which divides the Mississippi waters from the Atlantic, and has to overcome in that distance an ascent of 1700 feet. This is accomplished with

a maximum grade of 117 feet to the mile; and in being accomplised solves the problem of years—the practicability of a locomotive track over the Alleganies. The honor of the solution of this question is claimed for Mr. Benjamin H. Latrobe, the chief engineer of the company; for it is by the line run upon his own reconnoissance (adopted by the board of directors in preference to several other routes surveyed and passed upon by a board of consultation) that the road surmounts the barrier and passes on its course westward through the Glades.—And to the same gentleman is also due the full credit of sustaining in his capacity as the head of the engineer corps, the responsibilities, and of meeting the demaads, of the vast machinery embodied in the extension of this colossal work.

Two miles from Westernport, above the confluence of the Potomac and Savage, the road again strikes, crosses, and takes its final leave of the former river. Tae bridge at this point is one of the noblest structures on the line. Compelled by the rapidly ascending grade to cross at a point 50 feet below the stream, and 1000 feet above Baltimore tide level, the engineer has taken advantage of the ample sandstone quarries around, to make the bridge an enduring stone structure. The height of the bridge also gave full scope for a study of architectural effect, which resulted in the adoption of three full centre arches, each of 56 feet span, and 28 feet rise. Of the two abutments, the eastern is laid upon and backs on to a ledge of rock; and the western with a transverse length of 21 feet, 24 below the foundation offset, and 50 feet in height to the springing line, runs back 25 feet to the wing walls. These walls to sustain the immense pressure from behind, of an embankment averaging 45 feet fill for 300 feet, have a base 103 feet in length, and 11 feet in thickness; both of which dimensions diminishing by offsets as the pressure lessens, leave the wall at the top 30 feet in length by 4 in thickness. The wing walls are at right angles with the axis of the bridge, and are carried up straight 27 feet above the foundation offst, and thence stepped up in offsets 22 feet further. The two piers laid upon grillage foundations sunk below the river bed are 21 feet in transverse length, by 10 in width, above the foundation courses; and from the offset the eastern pier rises 11 feet, and the western 13 to the chord lines of their respective arches. From the same offset the starting round stones (semi-circular, as in the Cumberland viaduct) rise to within one foot of the springing lines, and are there capped by a heavy coping firmly bonded into the pier. The surface of this coping rises in the batter to the base of the pilaster, which ascends from each starling to the parapet coping; pilasters 4 feet by 2 also run up each side of the abutments. The arches are turned upon framed centres, with ringstones [vouissoirs] 3 feet in length, 14¼ inches in width at intrados, and 15¼ at extrados, and in depth 4 feet or 2, according as they are horders or stretchers. In the interior, the spandrel recesses, instead of a solid backing, have two spandrel walls of brick rising in batter from the extrados of the arch to the road level, where they terminate in string courses for the track. Capping the side walls is a course of coping 4 feet 7 inches in width, by 1 foot in thickness with bevelled edges. The drainage of the structure is provided for by copper leaders set within the masonry.

The axis of this bridge is upon a tangent and is also at right angles with the course of the stream. As the road passes over upon the heavy grade, the lines of the bridge necessarily ascend with it, thus occasioning a difference of heights in the piers and abutments; but this difference of level is skilfully compensated by starting the west ring course in each arch one course higher than the east; in other words by placing cushion stones underneath—which preserves the symmetry of the whole. Two hundred and seventy-six feet is the length of the bridge. The building material of the main structure is a compact light colored sandstone; 2·03 in specific gravity; that is 169¼ lbs. to the cubic foot. It is quarried near the bridge site, in massive blocks, which are laid in the best hydraulic cement. The Savage bridge was originally entrusted to a contractor, but was taken back by the company at an early stage of the contract. It has since been carried on by Mr. Gilbert H. Bryson, of Baltimore, the resident Engineer, and is now so well advanced as without doubt to be ready for the transit of trains in ample time for the opening of the road.

Half a mile further of tolerably light work, along the hill side of a spur of the great Backbone, terminates the first division of the extension. The second division (in charge of Mr. George Hoffman) takes the road up the Savage and Crabtree vallies to the Backbone summit, and across the Glades to beyond the Maryland line. The third division (in charge of Mr. Thomas Rowles) extends beyond Kingwood to the Valley river bridge. The fourth division (in charge of Mr. James L Randolph) extends to Fairmount, where the road crosses the Monongehala; and the remainder of the work as far as towards Wheeling as it is yet under contract, is in charge of Mr. Charles P. Manning. A description of this portion of the work will be prepared for your paper when the writer of this obtains the requisite details of information.

The first division is under the supervision of Mr. William H. Small, who as division engineer, has the whole work from Cumberland to Savage—the re-location, construction and the bridges—in especial charge. The division has four residencies, averaging seven miles each, of which the first residency is under Mr. Walter Smith; the second, Mr. Williamson Atkinson; the third, Mr. Blackstone, and the fourth Mr. Gilbert Bryson—and under each resident engineer are two assistants. Particular care and circumspection were taken in the location of the first division, as being the *point d'appui* for the extension. Several different and distinct lines were run from, and in the vicinity of Cumberland; and the present line adopted among these as the most eligible as well as economical.—And the subsequent execution of the work has been in keeping with the pains and skill bestowed on the location. The cuts are brought down to the lowest slopes and drained with ample ditches; the embankment is sheathed with rock riprappling wherever exposed to the river wash; and the small bridges and culverts laid in a thorough and substantial manner. So that when the road is completed, the directors will have at their hands a line located upon the test of repeated surveys, and a work in all its details—graduation, masonry and track superstructure—constructed upon the experience and experiments of years.

The first thirty miles from Cumberland to Savage river will be finished at the time indicated by the Chief Engineer, early in the coming season.—As to this there is no questson; the cross ties are now being delivered on the track. The remainder of the work is in a similar state of forwardness; and if the prediction of Mr. Latrobe—of an unbroken railroad connection between Baltimore and the Ohio by the summer of 1852—is not fully verified, then there is "no certainty in human affairs."—This of course presumes a prospering condition of the company's finances which has thus far marked their administration under president Swann. And that such will be the case would seem assured by the fact of the rise of the company's stock from 44 a 44½ in September, 1849, to 72 a 83 in 1850; and the company's state bonds in London—an incontestible evidence of confidence at home and credit abroad. M.

Internal Improvements in the State of New York.

A Sketch of the Rise, Progress and Present Condition of Internal Improvements in the State of New York.

NUMBER I.

In the annual message of Gov. Tompkins, in 1816, he submitted to the Legislature the question of connecting the waters of the Hudson with those of the western and northern lakes, and expressed a reliance on the co-operation of the western States, and Vermont, in any judicious plan to effect that object.

The commissioners made a short report, in which they stated that "during the late war it was impracticable to carry on any further operations to forward the objects of their appointment;" but they express increased confidence in the importance and practicability of the work, and recommend appropriations to employ engineers, and to commence the middle section, from Rome to Seneca river, as not only the most feasible part of the work, but which would tend to "divert the trade from passing down the Oswego river to Lake Ontario and Montreal." The charge for carrying a barrel of flour from Cayuga Lake to Montreal, in 1815, was $1 50, and to Albany $2 50.

Previous to the meeting of the legislature in 1816 steps had been taken to prepare the public mind in favor of the direct canal from Lake Erie to the Hudson. Judge Platt states that soon after the war ended, he had a consultation with Mr. Clinton and Mr. Eddy, and it was agreed to invite about a hundred gentlemen of New York to meet at the City Hotel for consultation in regard to the canal. This meeting was held in the autumn of 1815; William Bayard being chairman, and John Pintard secretary. Judge Platt made an address to the meeting, pointing out the general advantages of the canal, and the peculiar interest of the city in its construction; and in reference to the "stupendous project of an uninterrupted incline plane, which had been unfortunately proposed in the first report of the commissioners," Judge Platt says he "urged the expediency of a formal and public abandonment of that plan, for the simple mode afterwards adopted, of following the general surface of the country in its undulations. DeWitt Clinton, Thomas Eddy, Cadwallader D. Colden and John Swartwout were selected to prepare and circulate the memorial in favor of the Erie canal. This justly celebrated memorial was drawn by Mr. Clinton, and, as stated by Judge Platt, "the friends of the canal throughout the State, rallied under the standard of that memorial," and held meetings in Albany, Utica, Geneva, Canandaigua and Buffalo, to second the efforts in New York, and petitions to the legislature were circulated and signed in most of the western counties. Dr. Hosack, in his memoir of Mr. Clinton, states that "this memorial was signed by a great portion of the respectable citizens of New York, and was seconded by the corporation of that city."*

The memorial alludes to the chain of mountains which passes through the United States, which divides them into Eastern, or Atlantic, and Western, and to the fact that the Hudson river has a tide navigation of 160 miles; and the tide in no other place ascends higher than the Granite Ridge, or within thirty miles of the Blue Ridge, or eastern chain of mountains; whereas, in the Hudson, the tide breaks through the Blue Rridge, and ascends above the eastern termination of the Catskill, or great western chain; and there are no interposing mountains to prevent a communication between it and the great western lakes. It considers Montreal and New Orleans as the great rivals of New York: one relying on the St. Lawrence, and the other on the Mississippi; and it gives the distance from Buffalo, the proposed termination of the Erie canal, to the ocean, at 450 miles, by way of New York; 800 by Montreal; and by New Orleans 2,350 miles. And from Chicago to the ocean, by N. York, about 1,200; New Orleans 1,600; and Montreal 1,600. It then alludes to the Niagara portage and the rapids of the St. Lawrence, compelling them to load and unload three times, as obstacles to the northern route to the ocean; and the portage between Chicago and the Illinois river, as an obstacle in the Mississippi route. These impediments have been removed by the Welland and Illinois canals, from the usual routes, within a few years, and yet the Erie canal maintains its supremacy over those and its other rivals which have been created.

The memorial deplores the contrariety of opinion in regard to the route from Rome to Lake Erie, and takes decided ground in favor of the interior, against the Ontario route; intimating that a canal by the latter route was impracticable; a position which the construction of the Erie canal has shown to be erroneous.

The memorial estimates that the Erie canal will be the work of ten or fifteen years, and that the expenditure, in order to be beneficial, ought not to exceed half a million of dollars a year; and it says, "great care ought to be taken against high tolls, which will certainly injure, if not ruin, the whole enterprise." It recommends that the State should

* The New York memorial, with the original signatures, is preserved in the office of the Secretary of State at Albany, in vol. ix of the manuscript documents of the legislature, pp. 156 and 157.

"achieve this great work," and that it could be done by borrowing money and issuing stock, providing the ways and means to pay interest; referring to the salt duties and State lands as sources of revenue. It also alludes to donations of 106,000 acres of land from the Holland Land Company, and anticipates more than a million of dollars from these and other donations. The sum realised from grants of land has fallen far below this estimate. After holding the lands given by the Holland company until 1831, and exempting them from taxation for fourteen years, the State sold the whole tract for $28,210 26. The proceeds of the Hornby and Granger tracts did not exceed $4000, making a total sum realised from donations of lands of a little more than $32,000. This is exclusive of the grants of the right of way for the canal.

Alluding to the fears of the dismemberment of the Union, the memorial says: "The commerce of the ocean, and the trade of the lakes, passing through one channel, supplying the wants, increasing the wealth, and reciprocating the benefits of each great section of the empire, will form an imperishable cement of connection, and an indissoluble bond of union." New York being both Atlantic and western, is exhorted, in glowing terms, to put forth her strength to accomplish a work, which in its effects may tend to preserve the union of the States, and thus "prevent a train of the most extensive and afflicting calamities that ever visited the world."

Mr. J. R. VanRensselaer, from the joint committee, made a report, and introduced a bill "for improving the internal navigation of this State," authorising two millions of dollars to be borrowed, and the Erie and Champlain canals to be commenced. The bill was strenuously opposed in the Assembly, and a more cautious policy recommended. Judge Duer introduced a substitute, appointing commissioners, and providing means for procuring fuller surveys and estimates to be reported to the next Legislature. After long discussion, this substitute was amended, by authorising two hundred and fifty thousand dollars to be borrowed annually, and the total sum not to exceed two millions of dollars. In this shape it passed the Assembly on the 15th of April, by a vote of 91 to 18. The Senate, on motion of Mr. Van Buren, by a vote of 20 to 9, struck out so much of the bill as authorised the commissioners to borrow money, and commence operation on the middle section of the Erie canal, retaining the five sections originally offered by Judge Duer in the Assembly. The names of the thirteen commissioners sent from the Assembly were erased, and the names of Stephen Van Rensselaer, De Witt Clinton, Samuel Young, Joseph Ellicott, and Myron Holley, were inserted; the acts of 1811 and 1812 were repealed, and a new section was added, appropriating $20,000 to pay the expenses of completing the surveys, maps, etc. The Assembly, after considerable discussion, finally concurred in these amendments, by a vote of 43 to 34. This concurrence was brought about mainly by the active zeal of James Lynch, an ardent friend of the canal, and then a member from Oneida.

The commissioners appointed by the law of 1816 met in New York in May, and appointed Mr. Clinton president, Col. Young secretary, and Myron Holley treasurer. Col. Young dissented from a majority of the commissioners, as to the policy of sending abroad for an engineer, contending that competent skill could be found in our own country, and that the experience of a European engineer would avail him but little in constructing a canal through our forests and marshes.

The Erie canal was divided into three sections, and a chief engineer assigned to each. The western section, from Lake Erie to Seneca river, was committed to the care of James Geddes; the middle section, as far as Rome, to Benjamin Wright; and the eastern section, as far as the Hudson, to Chas. C. Brodhead. Col. Lewis Garvin was assigned to the Champlain canal.

In February, 1817, the new commissioners made their annual report, in which they give the dimensions fixed for the canal as follows: width, at water surface, 40 feet; at the bottom, 28; depth of water, 4 feet; length of lock, 90 feet; width, 12. The Erie canal was originally constructed according to these dimensions.

The distance from Lake Erie to Albany was reported at 353 miles 29 chains. The Erie canal, when finished, measured 363 miles, exclusive of the Albany basin. The rise and fall from Lake Erie to tide water was reported at 661 feet 35 hundredths, requiring 77 locks. Lake Erie 564 feet 85 hundredths higher than the Hudson, and 145½ feet higher than Rome.

The cost of the Erie canal was estimated at		$4,881,738 00
Of the Champlain canal		871,000 00
		$5,752,783 00
The actual cost of constructing the—		
Erie canal was	$7,143,789 86	
Champlain canal	1,257,604 26	
		8,401,394 12
Difference		$2,648,656 12

The commissioners say they "entertain no doubt but as much money can be obtained in this country as may be required for the canal, on the credit of the State, at an interest of six per cent., by the creation of a funded debt, and that ample funds may be appropriated for the payment of the interest, and the gradual extinguishment of the debt, without the imposition of taxes." Of the loans for the Erie and Champlain canals, three millions were borrowed at 6 per cent., and four millions at 5 per cent.

The whole subject, in reference to the internal navigation of the State, was referred to a joint committee of the two houses, of which Mr. Ford, of the Assembly, was chairman. This committee made a report in March, 1817, urging the purchase of the rights of the Western Inland Lock Navigation Company, and the immediate construction of the middle section of the Erie canal, and the commencement of the Champlain canal. The report recommended the organization of a board of commissioners of the Fund for Internal Improvements, to consist of the Comptroller, Secretary, Attorney General, Surveyor General, and Treasurer, and presented the details of the system of finance for the establishment and management of the canal fund, which was embodied in the act of 1817. The committee also presented to the Legislature a proposition from J. R. Van Rensselaer, of Columbia county, to complete the Erie canal for the State for ten millions of dollars; or for seven millions, and the tolls for twenty years; or for five millions, and the whole tolls for twenty years, and one half of the tolls forever thereafter. In either case, the State was to advance half a million, on security for a million, and, on proof that the money was expended on the work, another half million to be advanced, until the work was completed. The committee consisting of Messrs. Livingston, Tibbits and Swift of the Senate, and Messrs. Wm. D. Ford, Pendleton, Child, Eckford and Wilcoxson of the Assembly, gave a decided opinion against accepting the proposition, urging that "the State should retain perfect control of this canal, in every period of its construction and future regulation."

The report gives the cost of transportation from Buffalo to Montreal at $30 a ton, and the returning transportation from $60 to $75. "The expense of transportation from New York to Buffalo is about $100 a ton, and the ordinary length of the passage twenty days." The committee estimate that with a canal, the cost of transportation from Buffalo to New York would be from $10 to $12 a ton. The transportation from Buffalo to Albany has averaged $7 78 a gross ton for the last twenty years; and from Buffalo to New York the average would be about $8 81 for the same period. The cost of transporting merchandise from Albany to Buffalo has averaged $16 12 per gross ton for the last twenty years.* Putting the cost of merchandise at $17 50 per ton from New York to Buffalo, and it shows a gain of $82 50 per ton, compared with the cost before the canal was constructed; and on products coming from Buffalo to New York, the saving exceeds $91 per gross ton.

Before making his report, Mr. Ford addressed a letter to Mr. Clinton, as president of the board of commissioners, and received an answer giving most of the details in regard to the canals, and the system of finance, which are embraced in the report of the committee, and in the act of 1817.†—One member of the committee, however, George Tibbits, of the Senate, had an important agency in maturing and perfecting the system of finance contained in the act of 1817. The auction and salt duties, and other funds set apart by the act of 1817, furnished an amount more than sufficient to pay interest on all the money borrowed for the Erie and Champlain canals, until the payment of the principal was provided for. And this system of finance furnished the necessary means to reimburse the principal of the whole debt in about nineteen years from the passage of the law. The tax of two hundred and fifty thousand dollars authorised to be assessed on lands within twenty five miles of the canals, from the Mohawk to the Seneca river, and from Lake Champlain to the Hudson, was never collected.

The bill, as it passed the Assembly, provided for making the loans on the credit of the canal funds set apart by the first section, and when it came up for consideration in the Senate, Mr. Van Buren proposed to modify it so as to make the loans "on the credit of the people of this State," and made a strong speech in favor of the bill. This motion was adopted by a vote of 16 to 11. On the final vote the bill passed 18 to 9. Messrs. Tibbits, Van Vechten, Swift, Cochran, and Cantine, also advocated the bill in the Senate. In the Assembly, Messrs. Duer, Ford, Beach, of Cayuga, and Barnes of Oneida, were among the principle advocates of the bill.—*Merchants' Magazine.*

To be continued.

From the Journal of the Franklin Institute.

INVESTIGATION OF THE COMPARATIVE MERITS OF THE PERPENDICULAR AND RADICAL PADDLE WHEELS FOR SEA-GOING VESSELS.

By B. F. Isherwood, Esq., Chief Engineer U. S. Navy.

Continued from page 628.

Let us suppose, now, the same depth of immersion for the radiating paddle wheel, whose arm, as before, with a radial paddle at its extremity, is just entering the water at an angle of 45°, and having, as before also, the same less horizontal velocity than the velocity of the vessel. There is now no loss of reactionary force, but there is the loss by oblique action; and as the angle is 45°, it follows that half the force applied to the paddle is expended in lifting the vessel. This result, however, as with the perpendicular paddle, is too minute to be appreciable. The proportion now, of ths lifting force to the total power applied to the paddle under consideration, is fifty per cent—with the perpendicular paddle 25 per cent, to which must be added 25 per cent by reactionary loss. Hence there would be no superiority, economically, of the particular perpendicular paddle under consideration over the radial paddle, at this maximum immersion, in practice; but they would exactly equal each other, supposing, of course, the same horizontal velocity for each, and that horizontal velocity equally less than the velocity of the vessel.

This equality of loss is true, however, but of three positions of the paddles, viz., when the arm carrying them is either horizontal or vertical, or intermediate: that is, at 45°. In the first case, the wheel would be immersed to its axis; then, the radial paddle coinciding with the arm, all the power applied to it would be expended in vertical pressure only; and the perpendicular paddle at right angles to the arm, would cause a loss of the whole reactionary force applied to it. In the second case, both paddles would expend the whole power applied to them in the propulsion of the vessel. In the last case, as has already been shown, the loss of reactionary and lifting force by the perpendicular paddle, and by oblique action of the radial paddle,

* This is the average from 1830 to 1850. For the last three years, the toll on 100 lbs. of merchandise has averaged 24 cts., and the freight 15 cents, equal to 39 cents per 100, or $8,73½ per gross ton from Albany to Buffalo. For four years, the toll on a barrel of flour, from Buffalo to Albany, has been 31 cents, and the freight 33¼ cents; equal to an average of $6 61 per gross ton, on 364 miles of canal navigation.

† The Legislature of 1817, in regard to internal improvements, was unusually wise, and while it secured the regular progress of the Erie and Champlain canals, it preserved the credit of the State, and secured the people against taxation.

is equal, and amounts in both to 50 per cent. But this equality does not exist at any point between the angle of 45° and a horizontal and perpendicular position, and this results from the fact that the loss of labor by reaction and lifting, is in proportion to the *sines* of the angles, while the loss by oblique action is in proportion to the *squares* of the same sines.

Supposing, now, the purely imaginary case where the vessel has a greater velocity than the horizontal velocity of the paddle having the greatest horizontal velocity, and the wheel to be immersed to its axis; we should then have the following losses by two kinds of paddles, calculating the reactionary and lifting loss by the perpendicular paddle as the sines of the angles, and the oblique action loss by the radial paddle as the squares of the sines of the same angles—supposing the arms of the two wheels the same in number, and to be in corresponding positions.

Angle of arm with surface of water.	*Perpendicular paddle.* Loss by reaction and lifting.	*Radial paddle.* Loss by oblique action.	Difference of pad-dls.	Difference in favor of the radial paddle.
	p. ct.	p. ct.	p. ct.	p. ct.
0° or horiz'tl.	100	100	0	
5°	92	90	7	
15°	79	93	14	
25°	68	81	14	
35°	59	66	7	
45°	50	50	0	0
55°	41	34		7
65°	32	18		14
75°	21	7		14
85°	8	1		7
90° or perp'lar.	0	0		0
Totals,	450	450	42	42

In the above supposed case, then, we perceive there would be no choice between the two kinds of paddles, as they operate equal losses—the sum of the losses of each being equal and expressed by the number 450. Moreover, we perceive that, in going from 0° to 45°, the losses by the perpendicular paddle are less than by the radial paddle by the number 42; and that, in going from 45° to 90°, the losses by the radial paddle are less than by the perpendicular paddle by the same number, 42; further, that at midway between 0° and 45°, and 45° and 90°, the difference is at its maximum. Our supposed case is wholly an impossible one, but is adduced to explain the different actions of the two kinds of wheels. Practically, we must confine ourselves to the consideration of the mean case, where the wheels have an immersion of 5½ feet, and a slip of 20 per cent.

Referring now to our wheel of 28 feet diameter, 5½ feet immersion, and 20 per cent slip, the paddles would begin to enter the water when the arm bearing them made an angle of about 35° with the surface of the water, and would come into propelling action when the same arm made an angle of about 50° with the surface of the water. How would the proportion of losses by the two kinds of paddles now stand?

Premising that the loss by oblique action begins when the radial paddle enters the water, and continues till it reaches a vertical position, and that the reactionary loss by the perpendicular paddle is confined between the points where it enters the water and where it comes into propelling action, and that the amount of power applied to each *whole* paddle, in each position taken, equals unity or 100, the paddles acting during equal times, and if but a *fraction* of the *whole* paddle act, then the power applied to it will be that fraction of 100; and if the paddles act during unequal times, then the power applied to each will be in the proportion of the time it acts. Now from the angle of 35° to 90° we have taken six positions, in only the last four of which, however, the whole paddle acts during equal times. In the first position only about ¼th of the whole paddle acts, and that but for half the times of the others; the power applied to it will then be 1-16th of 100. In the second position only about ½ of the whole paddle acts; the power applied to it will then be half of 100. The whole power applied will therefore be represented by $400 + 6\frac{1}{4} + 50 = 456\frac{1}{4}$. The reactionary loss obtains for the first and second positions only, and for the first position, (taking the per cents of loss from the foregoing table,) will be 1-16th of $59 = 3{\cdot}7$. For the second position ½ of $50 = 25$; total, $3{\cdot}7 + 25 = 28{\cdot}7$. Then the whole power applied being represented by 456·25, the whole power expended in reaction and lifting will be represented by 28 70, or 6·3 per cent nearly.—The difference in favor of the perpendicular paddle over the radial paddle is therefore $18\frac{1}{4} - 6{\cdot}3 = 12$ per cent in round numbers. From this 12 per cent must be deducted the per centage of power absorbed in the friction of the eccentric strap, and journals of the levers of the perpendicular paddle wheel. That per centage of friction can only be determinmined by experiment. Taking it, however, at 10 per cent we perceive that, with equal slips, viz., 20 per cent, which is about the least that it is advisable to give, or is given in practice, and with a depth of immersion of 5½ feet for a 28 feet diameter wheel, which is the maximum mean immersion for the largest steamship making long voyages, the perpendicular paddle exceeds the radial paddle economically by 2 per cent. If the slip be varied from 20 per cent so as to become greater. or if the immersion be increased beyond the proportion of 5½ to 14, (the radius of the wheel,) the per centage in favor of the perpendicular paddle will be greatly increased. The only conditions under which a superiority can be given to the radial paddle are those of small immersion and small dip.

The per centage of loss by friction with the perpendicular wheel having been determined, and being allowed for, a simple calculation, similar to that above given, will easily ascertain the relative excellence of the two kinds of paddles in any given cases, when the slip and immersion of each are known.

I shall now proceed to determine this friction from such data as I am possessed of, on vessels using the two different wheels. For this purpose I have selected two vessels whose performances are given by the English Admiralty at a measured mile in the Thames river. The dimensions of the vessels are as follows:—

	"Black Eagle." Perpendicular paddle.	"Trident." Radial paddle.
Hulls.		
Length on deck	155 feet	195 feet
Beam "	26 "	31 "
Depth of hold	14 5-6 feet	18 "
Mean draught of water.	10½ "	11 "
Displacement	600 tons	900 "
Immersed amidship section	200 sq. feet	252 sq. ft.
Paddle Wheel.		
Effective diameter	20·25 feet	20·67 feet
Radius of circle of centre of reaction	9·60 "	9·77 "
Radius of rolling circle.	7·75 "	7·59 "
Breadth of paddle	4·17 "	2·00 "
Area of one paddle	22·90 "	18·00 "
Immersion of lower edge of paddle	4·96 "	2·08 "
Engines.		
Number of steam cylinders	2	2
Diameter	62 inches	70½ in.
Stroke of piston	4½ feet	5
Number of double str'ks per minute	23½	22
Mean effective steam pressure in the cylinder throughout stroke.	17 lbs	17 lbs.
Actual horse power developed by engines	665	891
Speed of vessel in statute miles per hour	13·14	11·92

The calculations we are about to make, have for their object the determination of the friction of the lever journals, and of the eccentric strap of the perpendicular paddle, in per cents of the total power developed by the engine. To effect this there must be calculated for the two vessels the losses, (omitting the friction loss by the perpendicular paddle wheel,) by their respective paddle wheels, viz., in the "Black Eagle" by slip and reaction, and in the "Trident" by slip and oblique action.—To these must be farther added the power, in per cents, which has been found in practice required to work the engine, and to overcome the friction of the load. The remainder of the power will be considered as that utilized in the propulsion of the vessel. The vessels, however, are of different dimensions, and the power required to propel them at equal speed will be as their resistances multiplied by their respective immersed amidship sections.—These resistances will be in the compound ratio of their immersed amidship sections and displacements. The previous remainder of the power being multiplied by these co-efficients of resistance inversely, will represent the powers proportionally to the resistance they overcome. The final comparison is now readily made, by taking these proportional powers as the measure of the powers, and the cubes of the speeds of the vessels as the measure of the effects.

To be continued.

Copper Mines of Lake Superior.

Perhaps at no time since the commencement of mining operations within the region bordering on Lake Superior have the prospects of this section been more promising or its business more actively prosecuted than at the present period. Mining and explorations are now prosecuted upon a basis far different from that which generally characterised the ephemeral operations of 1845 and '46, and although the errors, disappointments and losses to the multitude consequent upon the total want of knowledge and experience in those concerned might have been safely predicted, these tended, nevertheless, to create in the minds of many, doubts as to the real wealth of the country, which nothing but the strongest evidence could have removed.

Late developments as well in the copper as in the iron region have served to dispel these doubts in all concerned, and universal confidence now seems to exist that the apathy and mistrust which have prevailed are past to return no more. Soon the waters of our noble lake will be connected by a ship canal with her kindred waters, then will the exhaustless treasures of the Upper Peninsula, unrivalled in extent and quality, be poured out until they shall form one mighty and increasing stream of wealth, enriching alike our citizens, our state, and our common country.

The following hasty estimate will not vary far from the amount of copper in the rough, which will be sent down from Lake Superior during the present year, viz:

Boston and Pittsburgh Co about	1,800,000
North West "	400,000
North American "	120,000
Minesota "	200,000
Siskawit "	60,000
All others, not over	100,000
Being a total of	2,680,000

There will be employed this winter in operation connected with mining, about 1,000 operatives.—The following remarks are made without vouching for their perfect correctness, they are made with the belief derived from the best information within our reach, and are believed to be generally correct.

The Cliff Mine, owned by the Boston and Pittsburgh Co., will send down this summer somwhat less than last year; those who should know, however, say that the mine was never looking better than at present, and that it is now in a position to more than make up in the coming year any deficiency in this. There has been lately found upon this location a new vein, said to be fully equal in promise to the mine now worked. Should this prove equal to what is expected, the annual dividend of this company can without difficulty be made $30 or $40 per share, the original cost of which shares, including all assessments, was about $20 per share—they are now selling at about $100.

The North West is getting on famously and next to the Cliff they will this year send down more than any other mine on the lake.

The North American is doing well—a rich feeder has lately been struck near the bottom of the mine, which has materially improved its character.

The Cape, Iron City and North Western are working upon prospects, which are considered by those acquainted with them, as only needing labor to develope rich resources and the party engaged

thereon are men who will not allow them to fail for want of either energy or means.

Upon the Ontonagon the Minesota Mine is looking extremely well; their stock has advanced very rapidly since the commencement of the season, and is now in demand, we believe, at $100 per share.

The Adventure mine looks very well and is improving in regularity and their ground is extremely rich.

The Ridge mine looks well—they are now sinking a shaft, which, thus far, in richness, has been seldom excelled.

The Ontanagon Mining Co. have lately commenced work upon a very large and regular vein, which upon the surface appears to be a counterpart of the Minesota vein. It has thus far produced only stamp work. They are now bringing up an adit, which will drain the mine to the depth of 120 feet.

The Piscataqua mine, the work upon which is just commencing, has a large promising vein, rich in copper and accompanied by extensive Indian Diggings. This vein is about 4 feet in width, and can be traced by the ancient works for a long distance.

The Forest Mine has not been worked extensively this summer. They have constructed a road to the river at great expense of time and labor, and have done a vast deal of other work; and are now prepared to commence mining in earnest. They have a vein easily worked, carrying copper richly dissemminated.

The Ohio Trap Rock has not been worked for the last year, but they are about to recommence operations. We understand a sale was made, a short time since, of about 1000 shares at $12 per share.

The Norwich Co. are also recommenceing operations upon their mine which has not been worked for the last two years. It is said, they have a good show.

The Algonquin Co. are sinking a perpendicular shaft upon their vein which they have just intersected. They have a very large vein, which in places where it makes its appearance, is very rich. They recommenced operations last spring, having done nothing for several years.

The Douglass Houghton Co. are sinking and drifting on a vein that is said to be improving in its character. They have already out some masses and a quantity of excellent stamp work.

The Merchants Mining Co. will commence work this fall, as will also the Chesapeake Mining Co. The locations of both of these Cos. present very favorable indications. There are also three other companies which will probably be worked on the Ontanagon, but it is not yet certain.

On Isle Royale the Siskawit Co. are doing well. Their shaft is about 60 feet deep—lode in the bottom two and a half feet wide, and rich in stamp work. They have about completed their stamp works.

The Ohio and Isle Royale Co., the Pittsburgh and Isle Royale Co. will carry on operations on the island during the winter.—*Lake Superior Journal.*

Ship Building in New York.

Continued from page 627.

WILLIAM H. COLLYER.

The St. Lawrence, a steamer for the Portland Steamboat Association, is just off. She is a handsome craft, 300 tons burden, 225 feet long, 28 beam, 10½ hold. Her route will be from Portland to Boston, and she is well calculated to stand the rough usage of that coast. Her engine, built at the Morgan Works, is 44 inch cylinder, 11 feet stroke. We believe Capt. J. B. Coyle will command the *St. Lawrence*.

A Steamship is on the stocks for Morgan & Harris, intended for service between New Orleans and Brazos Santiago. Her dimensions are: burden, 1,200 tons; length, 215 feet; beam, 33; hold, 16.—Her engine, building at the Morgan Works, will be 56 inch cylinder and 10 feet stroke. She is an uncommonly strong vessel; will be launched, probably in 10 days.

JEREMIAH SIMONSON.

The Prometheus, launched a few days since, is owned by Capt. Vanderbilt, or rather by the Nicaragua Ship Canal Company. She is a fine steamship, of 2,000 tons, 240 feet long, 35 beam, and 22 hold, with a promenade deck, seven feet above the main deck. Capt. V. has superintended her construction himself, and the builder has made her a first-class vessel.

A steamboat, of only 100 tons, 100 feet long, 20 beam and 5 hold, intended to run up the San Juan, was launched about the 1st of July. She belongs to the canal company.

Another steamboat, of only 65 tons, 80 feet long, 20 beam, and 4½ hold, destined for the same place, was launched about the same time.

THOMAS COLLYER.

The Carribean, a steamship of 1,800 tons is now under way at this yard. She is 240 feet long, 31 beam and 23 hold; she is to be commanded by Capt. J. J. Wright, formerly of the *Alabama*, and is owned mainly by him. The *Carribean* will run with the *Alabama* between New Orleans and Chagres. Her engines, building at the Phenix Foundry, will be 52½ inch cylinder and 10 feet stroke, of the beam pattern, showing the novelty of two walking beams, as was once in practice on a North river boat. The *Carribean* will be launched in about two weeks.

Williamsburgh.

PERINE, PATTERSON & STACK.

The Lady Franklin, a beautiful packet ship, named after the wife of the lost navigator, was launched early in July. She is said to be one of the best ships ever built in the United States. Her cabin is extremely neat and elegant, and her state rooms are furnished in a style seldom attempted on board sailing vessels, and conspicuous among them is Lady Franklin's state room, fitted for the exclusive accommodation of that lady, should she feel disposed to pay America a visit. The second cabin is also a most airy and comfortable place, and very commodious. The accommodations for the steerage passengers are a great improvement. The bunks (as also in the second cabin) are all hung in moveable iron frames, and can be removed in a minute, if more room be required for stowage. The cooking apparatus for the steerage passengers is "Yeatons Patent," by which upward of twenty can bake, boil and roast at one and the same time, and completely protected from the weather. There is also an hospital on the centre of the upper deck, capable of accommodating about a dozen patients; and water closets for each class of passengers.—Nothing is wanting for the comfort of all. She is built for S. Thompson & Nephew's line, and is commanded by Capt. S. Yeaton, well known as commander, successively, of the Oxford and Fidelia. The following is a description of her build: Dimensions—180 feet long, 40 feet beam and 23 feet hold, with long poop deck and verandah; midship house and top gallant forecastle; 18 frames forward and aft of live oak, all dead wood; and kelsons forward and aft of live oak, locust and cedar; fourth futtocks, tops and stanchions; 2 thick garboard streaks, 8 and 7 inches thick, bolted thro' the sister kelsons in every timber. and bolted vertically into the main keel every 30 inches; 4 inch bottom planks, with 21 streaks of 5 inch whales, all square fastened and butbolted; plankshire and rail, 6 inches thick; 3 tier of kelsons in the centre, with sister kelsons, 15 by 16 inches square; three streaks of bilge kelsons on each side, 17, 16 and 15 inches deep, by 15 inches wide, and has over 6 tons of iron fastenings on them; from the kelsons in the turn of the bilge there are 5 streaks of 8 inches thick, and 7 inches to the lower deck; 2 bolts in each streak, in every timber; her deck and hanging knees are all of Maryland and Virginia white oak; deck breast hooks, live oak; the 6 other hooks are of white oak, and are remarkable for their size, and the quantity of fastenings in each; her deck beams are larger than in any ship of her size ever built in this city; she has, besides her entire stancheons, a tier of bilge stanchions, running from her upper deck to the bilge streaks, and strapped and bolted to the beams and kelsons. She has two bolts in each floor, fore and aft. She has a round stern, and is 1,294 tons register.

The Arctic, packet ship, was launched in August, and cleared on the 23d ult. for Liverpool.—She belongs to A. Zerega's line, and is commanded by Capt. Zerega. The *Arctic* measures 1,380 tons, and is 180 feet long, 40 beam and 23 hold. She is a fine vessel, and all her apartments are liberal and judicious.

The San Francisco, now on the stocks, is a steamship of 2,000 tons, for Howard & Son's Pacific Line, intended to run on the western side. She is 230 feet long, 40 beam and 24 deep, and will be one of the strongest steamers yet built. Her frame is of live oak, fastened with diogonal braces in the most substantial manner. Her two engines will be built at the Morgan Works.

The Brother Jonathan, a steamship of 1,000 tons, also for Howard and Son, is nearly ready to be launched. She will be 220 feet long, 35 wide and 14 deep, and is designed for river navigation. The engine formerly in the Sound steamer *Atlantic* will be taken: it has not been used since taken from the *Atlantic*, and will be a very powerful machine in a ship of the size intended.

The Hornet, a propeller, of 1,150 tons, is under way, for Capt. Stoddard. Her dimensions are:—Length, 210 feet; beam, 32; hold, 26. She is intended to make excellent time; her propeller is 14 feet in diameter. Hogg and Delameter are building the engines, 50 inch cylinder and 44 inch stroke.

A Clipper Ship keel is laid. She will be 800 tons burden; 160 feet long, 35 wide and 19 hold, built of the best materials and intended for speed. She is owned by Messrs. Siffkin and Ironside.—This makes the eighth vessel built in this yard this year.

JABEZ WILLIAMS & CO.

A Clipper Ship is under way for Thomas Wardle & Sons, intended for the Pacific trade, and to be commanded by Capt. Hamilton, late of the South Carolina, an experienced officer. The ship is to be heavily sparred, and furnished throughout with Waterman's Patent Blocks. The tonnage is 1,340 tons. Dimensions as follows:—200 feet on deck; 194 feet keel; 37 feet beam, molded; 21 feet 6 inches depth of hold; main kelsons, 7 feet through, by 15 inches width, with sister keelsons, 9 feet by 15 inches. 1⅛ copper floor bolts every 28 inches. Dead woods at each end, are live oak, fastened with 1⅛ copper bolts. Live oak top throughout.

The Great Explosion at Seaford.

Great excitement was caused at Seaford, on Thursday, that being the day when an explosion of a part of the cliff took place, as had been previously announced. Seaford is twelve miles from Brighton and about five from Beachy Head. The sea having gradually encroached upon the land, it was determined to throw down a part of the cliff, so as to form a barrier against its future ravages. For this purpose, 55 of the Royal Sappers and Miners have been engaged for the last seven weeks making the necessary preparations.

The cliff was perforated in various places with tunnels and shafts, and in each of two chambers excavated for the purpose of a charge of 12,000 lbs. of gunpowder was deposited. By 3 o'clock, the hour fixed for the explosion, about 10,000 people had assembled, and means were taken to keep them at a proper distance beyond the reach of danger.—The gunpowder being fired by voltaic batteries at twelve minutes past 3, suddenly the whole cliff, along a width or frontage of some 120 feet bent forward towards the sea, cracked in every direction, crumbled into pieces, and fell upon the beach in front of it, forming a bank, down which large portions of the falling mass glided slowly into the sea for several yards like a stream of lava flowing into the water.

The whole multitude upon the beach seemed for a few moments paralyzed and awe struck by the strange movement, and the slightly trembling ground. There was no very loud report; the rumbling noise was probably not heard a mile off, and was perhaps caused by the splitting of the cliff and fall of the fragments. There seemed to be no smoke, but there was a tremendous shower of dust. Those who were in boats a little way out, state that they felt a slight shock. It was much stronger on the top of the cliff. Persons standing there felt staggered by the shaking of the ground, and one of the batteries was thrown down by it. In Seaforth, too, three quarters of a mile off, glasses upon the table were shaken, and one chimney fell. At New-

haven, a distance of three miles, the shock was sensibly felt.

In a few moments after the cliff had fallen the crowd upon the beach rushed forward to it. A second fall of chalk, when they had got halfway, checked them for an instant, and but for an instant. They rushed up the mound which the exploded chalk had formed. Although it is a mass of large rough stones for the most part difficult in many places to climb, except by using one's hands as well as feet, yet ladies eagerly clambered up it, and one gentleman managed to get his horse up. The mass which came down is larger than was expected; it forms an irregular heap, apparently about 300 feet broad, of a hight varying from 40 to 100 feet, and extending 200 or 250 feet more seaward, which is considerably beyond low water mark. It is thought that it comprises nearly 300,000 tons. The operation is considered to have been decidedly successful.—*English paper.*

Maryland.

Business of the Baltimore and Ohio Railroad.—The following are memoranda of the busines upon the Baltimore and Ohio railroad, for the month of September, 1850.

The transportation eastwardly into the city of Baltimore, of some of the principal staples has been as follows:

Bark.....	24 tons	Lime.....	8 tons
Coal.....13,393	"	Live stock viz:	
Fire brick.....	112 "	7,325 hogs....519	"
Firewood.....	15 "	420 sheep.... 28	"
Flour.....40,155	"	210 horses and mules..... 92	"
Grain.....	52 "	42 Horn'd cat.. 18	"
Granite.....	411 "	M'l. & shorts.227	"
Iron.....	555 "	Pork & bacon. 61	"
Iron ore and manganese.	88 "	Tobacco.....142 hds. Whiskey.....408 bbls.	
Lard and butter.....	17 "	Miscellaneous.253 tons	
Leather.....	94 "		

The revenue for the month has been as follows:

	For Passengers.	For Freight
Main stem.....	$33,637 35	$94,355 00
Washington branch.....	24,300 50	11,921 68
	$57,937 40	$106,276 68

Making an aggregate of $127,792 35 on the main stem, and $36,221 73 on the Washington branch—the total being $164,214 08.

The above shows an increase over the corresponding month of last year of $16,258 15, being $8,126 92 on the main stem, and $8,131 23 on the Washington branch.—*Patriot.*

Atlantic and Pacific Railroad.

Our readers will recollect, that some years ago the indefatigable Mr. Whitney, set on foot a grand project of connecting the Atlantic with the Pacific by railway, to commence at the west end of Lake Michigan, to be constructed by means of a sixty miles strip of public lands, to be conveyed to Mr. Whitney at a nominal price for that purpose. Conventions of delegates on the same subject were held last fall at Memphis and St. Louis, and this spring at Philadelphia. During the recent session of Congress committees reported favorably on the plan of Mr. Whitney. From all these proceedings we see that it is now conceded on all hands, that it is expedient, necessary and practicable, to construct the work, but that the great difficulty in the way is the *means;* how are they to be raised?—Some of the friends of the plan of constructing the work by the government, say that the whole of the public lands should be appropriated, and if they should not be sufficient to construct the work, supply the deficiency by an issue of stocks, and private subscriptions. The friends of the Whitney plan object to this, and seem to think that Mr. Whitney can construct the work out of the proceeds of a strip of thirty miles of public lands on each side of the road. It seems to us, with all due deference to the opinion of others, that the *means* have not yet been found to construct this gigantic work, costing by estimate not less than one hundred millions of dollars. Applying the whole nett proceeds of the public lands, as fast as sales can be made, it would take nearly thirty years to make the work, and allowing one third as much for the proceeds of a strip thirty miles wide, it would require about ninety years, supposing that no repairs were needed in the meantime. We would gladly see the work constructed, and we feel confident that some plan will yet be devised and carried out for the accomplishment of an end that all seem to desire, still in the meantime a railroad is gradually progressing west by private companies, to the mouth of the Kansas river, the point at which it was proposed at the St. Louis convention, the main trunk line should commerce. When the branches shall reach this point, so many interests will combine to extend the line, that the means will be found either by the government, or private companies, with, or without the aid of the government. A work so necessary and important can never rest until it is constructed.—*Ind. State Sentinel.*

Massachusetts.

The following account of the receipts and expenses of the Boston and Worcester railroad is from official sources:—

Receipts from 1st Dec. to 1st Sept., 9 months.....		514,786,56
Expenses.....		262,528,92
		252,257,64
Reserved income.....		8,404,68
		260,662,32
Dividend 1st June, 3 per cent.	135,000.00	
Interest account.....	13,699,28	
Balance income account 1st Sept., '49.		$111,963,04

The earnings for the nine months, exceed those of last year to the same date, $46,862,26. The increase in September was $4,605,04, making total increase to October, 1st, $51,467,20. The entire increase has been in passenger receipts, making a gain of seventeen per cent. The January dividend will not be so large as the Western railroad's; but if these two lines could be united in one corporation, the saving in expenses, under a single management, would make the united line a safe and sure eight per cent. stock, which would doubtless command in the market as good as those paid for the Lowell and Fitchburg.—*Bos. Cour.*

Maine.

Kennebec and Portland Railroad.—The annual meeting of the stockholders of the Kennebec and Portland railroad company was held in Bath on Thursday, October 3d. Hon. D. C. Magoun of Bath, was elected chairman. The annual report of the president of the company was then read, and two thousand copies voted to be printed. The report states that an arrangement has been made with Mr. Marsh, the former contractor, to finish the road to Augusta on terms more favorable to the company, than those stated in the legislative report which was the basis on which the towns voted to loan their credit. According to the new contract the whole road is to be completed to Augusta by the 1st day of September next.

The following persons were elected directors for the ensuing year:

Reuel Williams, Augusta; George F. Patton, Bath; Wm. B. Sewall, Bath; John D. Lang, Vassalboro'; Joseph M'Keen, Brunswich; Marshall S. Hagar, Richmond; Thomas W. Smith, Augusta; George W. Stanley, Augusta; Wm. B. Grant, Gardiner; Henry Reed, Hallowell; Parker Sheldon, Gardener.

Wm. B. Brooks, of Augusta, was chosen Loan Commissioner, on the part of the towns.

A vote of thanks was unanimously and enthusiastically passed, to the president and directors, for their judicious and untiring efforts to promote the interests of the company. The utmost harmony and unanimity prevailed, and the meeting dissolved in the best state of feeling, inspired by the favorable prospect of the speedy completion and ultimate profitableness of the Kennebec and Portland railroad.

How it Works.

We understand that the Amory Iron Works of this city, and the Manakin Iron Works, about 12 miles distant, have both put out their fires and discharged their workmen; waiting some change in the existing policy of the government, which would enable them to resume operations without the certainty of loss. These events are much to be lamented, as hundreds of industrious operatives and their families, dependent on these establishments, are thus deprived of employment, and thrown upon the charity of the world for their daily support.

No man, not familiar with the operations of a rolling mill, can form an adequate idea of the amount of material and labor required to carry it on; and the stoppage of such an establishment is a serious calamity and public loss. We understand that the Amory rolling mill worked up annually 4000 tons of pig iron, and consumed about 200,000 bushels of coal. Estimate the number of hands required in the production of this iron and coal—the number necessary to transport it to market—the number needed to manufacture the iron, and the agricultural labor required to feed the various operatives, and some idea may be formed of the advantages resulting to the community from iron manufactories.—*Richmond Whig.*

New York.

Rochester and Syracuse Railroad.—At a meeting of the stockholders of this company held recently at Canandaigua, the following gentlemen were elected directors:

H. B. Gibson, J. B. Varnum, J. J. Vanalen, Jno. Wilkinson, John H. Chedell, Nathaniel Thayer, W. F. Weld, Horace White, Jacob Gould, E. Darwin Smith, Joseph Fellows, Charles Seymour, R. H. Ives.

At a subsequent meeting of the directors, H. B. Gibson was chosen president, Charles Seymour secretary and treasurer, and Charles Dutton superintendent.

Railroad Superintendent.—Charlton Dutton, for several years the efficient superintendent of the Tonwanda railroad, has been appointed superintendent of the Rochester and Syracuse road. Mr. D. is a gentleman of great energy of character and untiring industry. He will discharge his duties acceptably.

Ohio.

We are happy to announce that Judge Lane has returned from the east, having succeeded beyond his expectations in negotiating for the road. He has also secured the right of the Ohio railroad company from Sandusky to Toledo. This places the construction of the road to Toledo beyond question. Mr. Morton, the resident Engineer, is now examining the estimates and will be ready to report early this week. The road will then be put

under contract, and the work immediately commenced. The route is very favorable, the estimates being nearly $5,000 per mile less than the Norwalk route.—*Elyria Cour.*

AMERICAN RAILROAD JOURNAL.

Saturday, October 12, 1850.

Importance of Railroads and Manufactures to the South.

Thus far the south may be said to have devoted herself to one interest, agriculture. Although other branches of industry have been followed to some extent, the former is the great absorbing pursuit of that portion of the Union. The consequences of this are daily becoming more and more marked.—Experience has fully proved that so long as we have an abundance of unoccupied territory, the population of the agricultural districts, in every part of the country, after it reaches a certain limit, remains nearly stationary; the increase finding it more for their interest to go to the new lands, which are cheap and fertile, than to remain where cultivation and population has given them a high value. The agricultural towns in Massachusetts, the most rapid growing of the old States, have increased but a very little for thirty years past. Western New York, the most fertile portion of this great State, will show but a slight growth since 1840; not so much by any means as the eastern portion. The same law of population is observable in every portion of the country. The north, in addition to agriculture, is extensively engaged in commerce and manufactures. She possesses elements of growth here that the south has not availed herself of. The increase of population in the Eastern and Middle States is almost entirely owing to their progress in these branches of industry.

The growth of manufacturing establishments, as a natural consequence, stimulated the construction of means of transportation, and these, by opening access to the natural resources of the country, its water power, coal, iron ores, etc., etc., operated powerfully to the development of these resources. Manufacturing and the construction of works to cheapen transportion have gone hand in hand; the latter being absolutely essential to success in the former pursuits.

In the above remarks we find in part the explanation of the greater density, and more rapid increase of population, in the Northern than the Southern States. The latter, taking only such territory as is actually settled, presents the greatest area. It certainty possesses greater capacities for a more dense population, and the reason why it does not number more inhabitants is because only *one* of those elements is made the basis to sustain them.

Now one of the rights which the south insists upon, is, that she shall be permitted to continue to exert in the administration of affairs the relative influence which she has thus far maintained in the government of the country; in other words, that each portion of the country shall continue to exert its *moiety* of influence. Without going into any discussion as to the merits of the claims advanced on either side, it is certainly very proper to call the attention of what, at present threatens to become the weaker party to the means by which alone the equilibrium can be maintained.

In this country public opinion must ever be the germ of law. It becomes law as soon as it can be ascertained and defined. Now public opinion is the conviction and will of the majority; and that the majority are entitled to make laws which shall promote the interests of the greatest number, is not only agreeable to the form of our government, but to natural equity. The rights secured to the minority by the constitutional guaranties, and by the law of natural right, should be respected, but where these are not violated, the will of the majority is, and should be paramount.

There are many laws coming within the scope of our national legislature which may favor one portion of the country more than another. The South believes that the North frequently enact such by virtue of numbers alone. If this is admitted, what is the remedy? for the exercise of this prerogative may be a right which cannot be disputed. It is simply this: the South must increase her numbers. Here is her true and a certain remedy. She possesses most fully the means to apply this cure.

She has ample territory. She has the superiority in climate and soil. In her magnificent rivers she possesses superior natural facilities for transportation. She can construct railroads, the greatest source of northern progress, for one quarter their cost in the North. She is far superior to the North in the extent and richness of her mineral deposits. She possesses in a greater degree all the elements which form the basis of a dense population, consequently of political influence. If she has lost some portion of this influence, she still possesses the capacity of regaining it. The policy for her to pursue is a plain one. She must turn her natural advantages to the best account. If New England grows by virtue of cotton spinning, she must spin too. If Pennsylvania gains rapidly by working her coal and iron, she must not suffer her coal and iron to lie idle in the ground. Any disparity which is the result of superior enterprise is no cause of complaint, though is may bring with it inconveniences to one party. It is the natural reward of superior industy and activity, and instead of being a cause of dissatisfaction, should only serve to stimulate to increased efforts. Every act of life has its appropriate results, which are inevitable. We must not complain of *results*, so long as the *cause* is in our power.

The steps necessary to restore this equilibrium, we are glad to see are now be taken by the South in earnest. The subject of the development of the resources of that part of the Union, are now engrossing the attention of its people. Railroads, the pioneers of all other improvements, are projected in every quarter, and many of them are in progress. Wherever they run by a water fall, an iron or coal mine, some one will be sure to be found who will be ready to turn all these to account. The improvement of these sources of wealth will react upon agriculture. A market will thus be opened for a very large amount of products, which may be made the basis to support a home population, but which cannot be exported. The South then can raise something to sell besides *cotton*. *Farming* to some extent will then take the place of *planting*. The agricultural sections will fill up. A mutual demand will grow up between all classes for the respective products of each; in fine, we see at the South the same state of things which we witness in every community whose industry is devoted to different objects.

So much for restoring an equilibrium based upon eqality of numbers. Similarity of pursuits, while they will secure what may be termed *physical* equality, will create at the same time a much stronger bond of union, similarity of interests and ideas. Under this influence local distinctions will be forgotten. The words North and South, East and West, will cease to stand for terms representing different parts or interests. Every partes of the country will occupy an equal place in each person's affections.

Let us all do our utmost to promote that state of things which shall not only be productive of the greatest *material* good to all, but which at the same time shall work an effectual cure for the political ills which threaten.

Important Patent Decision.--India Rubber Springs for Railroad Cars.

The Commissioner of Patents has lately decided that F. M. Ray, of this city, is the inventor of the application of India-rubber to the use of car springs. The claimants for the patent were W. C. Fuller, of England, and Mr. Ray. All the springs in use have been made by parties representing the above persons, and the great and rapidly increasing use of India-rubber for springs, rendered the decision of the Commissioner of Patents, settling the rights of the claimants, a matter of great importance to those interested.

Annexed is a copy of the official certificate from the Commissioner of Patents:

COPY.

U. S. PATENT OFFICE, WASHINGTON, D. C.,
12th September, 1850.

Sir—You are hereby informed that in the case of the interference between your claims and those of W. C. Fuller, upon which a hearing was appointed to take place on the second Monday in August, *the question of priority of invention has been decided in your favor.* I enclose a copy of the decision.

The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,

Signed DELLITT C. LAWRENCE,
Acting Commissioner of Patents.

To Mr. Fowler M. Ray.

Illinois.

The traffic of the Galena and Chicago road, which extends into the prairies some forty miles to Elgin, shows a highly satisfactory result. In September the receipts were $14,038 95, against $4,267 43, showing an increase of $9,791. The business of the nine months to 1st October was $73,706 82.

DeBow's Review of the Southern and Western States.

We have received the October number of this valuable periodical, which is mainly devoted to the promotion of the interests of the Southern and Western portion of the country. In addition to its general literary merits, it is very valuable for the full statistical information which it gives of Southern industry and progress. These statistics are collected with great care and industry; and the work presents more useful information in relation to the great staples of the South, than can be found in any other periodical. As these staples form the basis of a great part of all our leading commercial transactions, the above work is an indespensable part of every business man's library.

To the South it is calculated to be of great advantage in elucidating her interests, in pointing out her resources, and in aiding in their development, in recording her progress, and in the influence which the information which is collected will exert in directing and guiding her industry. We are happy to bear testimony to its high literary merits, and to the accuracy of its statistical information, and are happy to learn that it is enjoying a liberal patronage.

The editor and proprietor of this work is now in this city on business connected with it, and will be happy to receive subscriptions to the same. He has a few sets of the entire work still remaining, which will be delivered in any of the large cities or towns, without any expense to the person ordering, viz: in Boston, New York, Philadelphia, Baltimore, Richmond, Charleston, Mobile, Savannah, Vicksburg, Memphis, St. Louis, Cincinnati, etc. Subscription Price, $5.

Pretty Good Business.

The Reading railroad is now carrying at the rate of about 130,000 tons of coal per month. This, at $1 65 per ton, gives a monthly revenue from coal alone of $214,500, equal to $2,794,000 for the year. We belive, after all, that the recent freshet in Pennsylvania, which has proved so destructive to some of her works, will prove a God-send in the end. It has brought up the price of coal to a high point, and we should not be surprised if a long time elapsed before it settled again to its former rate.—The present advances maintained will soon amount to the loss sustained, and it may be kept up in part after all the means for transporting coal are again in operation.

Flat Bar Rail.

Our readers will find under our advertising head a quantity of flat bar Iron for sale. The notice is well worth the attention of those who are using this kind of rail.

Pennsylvania.

The Coal Trade.—We stated two weeks since, that it was *possible* for the Beaver Meadow, Hazleton and other colleries depending upon the Beaver Meadow railroad for their outlet to navigation, to ship in the aggregate about 60,000 tons if the Beaver Meadow railroad was repaired so as to give them five weeks of shipments.

The repair of the road has for some cause been delayed, and it will now be impossible to put it in order, so as to do business upon it, before the close of the season. No more coal will be shipped from the collieries above named this season.

The only collieries which will be in operation the balance of the season, are the Lehigh or Summit mines, Nesquehoning and Buck Mountain.—*Carbon Co. Gaz.*

New and Important Discovery in the Manufacture of Iron.

The Pittsburgh Post has a letter giving an account of a discovery made by a young man by the name of Adams, the assistant manager of the Brady's Bend Iron Works, in Clarion county, in the manufacture of railroad and merchant bars from coke metal. By the old method the rails were made with charcoal pig; and would crack very much and break with one or two blows. By Adams' process iron can be made from eight to ten dollars per ton lower, and of a superior quality.—The process is not mentioned, but the quality of the iron produced is spoken of. The writer of the letter was shown a rail that had been put to the severest test, by putting it, while hot, into cold water—after which they tried to break it with a sledge hammer weighing 80 pounds. Forty blows were given by six men alternately, and they could not even crack it. The charcoal iron of the company costs from 18 to 22 dollars per ton, their "coke metal" costs only from 9 to 11 dollars per ton.

Maine.

We learn that John Russell, Esq., the intelligent and judicious superintendent of the Portland, Saco and Portsmouth railroad, has received the appointment and accepted it, of superintendent and agent of the Kennebec and Portland railroad. Probably a more judicious and excellent appointment, under the circumstances, could not have been made, and a more judicious measure could not have been adopted by the directors. Mr. Russell is a well-informed, practical man, with all the knowledge of geometrical and mechanical principles, that such a situation calls for; and if there now exist irregularity, confusion, or want of system, he will very soon reduce things to order.

New Hampshire.

New Hampshire Central Railroad.—At the annual meeting of the New Hampshire Central railroad company, held at East Weare, on Thursday, 3d in., the following gentlemen were elected directors for the ensuing year:—David Steele, of Goffstown, Edward Crane, of Boston, Moses Sawyer, of Weare Moses A. Hodgden, of Weare, John T. Cahill, of Worcester, L. Smith, of Henniker, Abner Hoyt, of Goffstown.

Indiana.

Madison and Indianapolis Railroad.

The receipts of this road for September, 1850, were	$23,895 08
Ditto for 1849	16,946 41
Increase	$6,948 69

A gentleman connected with this road writes us under date of Oct. 2d, that:—"The Knightstown road will be opened to Carthage, 12 miles, in all, next week, and the Bellefontaine will be opened to Pendleton, 26 miles, on Tuesday next." The above roads will add very largely to the business of the Madison and Indianapolis.

Tennessee.

East Tennessee and Georgia Railroad.—A model of the rail to be used on the East Tennessee and Georgia railroad has been left at our office, where such as desire to do so may examine it. Competent judges pronounce it an excellent rail.

We are pleased to learn that the present efficient engineer of the road is "winning golden opinions," for the manner in which he is conducting the work under his charge. The work on the road is progressing rapidly, and the section between Dalton and the Hiwassee will be ready for laying down the rails in a short time.—*Knoxville Register.*

NOTICE

For Proposals for Railroad Iron, for the Alabama and Tennessee River Railroad,

TO BE MANUFACTURED FROM ALABAMA ORE.

THE Alabama and Tennessee River Railroad Co. invite proposals, until the 1st of January, 1851, for Iron Rails, to be made of Alabama Iron, for the Northern Division and part of the Southern Division of their road, embracing a distance of about 105 miles. The rails are to be of the H pattern, in lengths of 18 feet, and weighing 63 lbs. per lineal yard. They are to be delivered on the Coosa river, at a landing to be hereafter designated, between Kimulgee ferry and Fort Williams, commencing their delivery on the 1st of November, 1851, and continuing it at the rate of from 80 to 100 tons per week, until the whole quantity required (10,500 tons) shall have been delivered. They are to be inspected by Lewis Troost, Chief Engineer.

It is proper to state to iron masters and capitalists at a distance, that the country traversed by the Northern and part of the Southern divisions of the road abounds in excellent iron ore and bituminous coal, and possesses every advantage for the successful manufacture of iron, health, cheap labor and provisions.

Further information may be obtained by addressing the President of the Company at Selma, Ala.

By order of the Board of Directors.

J. W. LAPSLEY, President.

STATE OF NEW YORK.

SECRETARY'S OFFICE, ALBANY, AUGUST 15, 1850.—To the Sheriff of the City and County of New York:—Sir, Notice is hereby given that at the General Election to be held in this State on the Tuesday succeeding the first Monday of November next, the following officers are to be elected, to wit:—A Governor in the place of Hamilton Fish; a Lieutenant Governor in place of George W. Patterson; a Canal Commissioner in place of Jacob Hinds; an Inspector of State Prisons in place of David D. Spencer; a Clerk of the Court of Appeals in place of Charles S. Benton; a Representative in the 32 Congress of the United States, for the 3d, 4th, 5th and 6th Districts, in place of J. Phillips Peœnix, Walter Underhill, George Briggs and James Brooks. County Officers to be elected for said county: sixteen Members of Assembly; a District Attorney in place of John McKeon. All of whose terms of office will expire on the last day of December next. And also a City Judge, in pursuance of charter 206, laws of 1850. [The electors throughout the State are also to vote for or against the repeal of the act entitled "An act establishing Free Schools throughout the State," passed March 26, 1849, and an act entitled "An act to amend the act entitled an act establishing Free Schools throughout the State, passed April 11, 1849.]

Yours respectfully

CHRISTOPHER MORGAN,
Secretary of State.

Sheriff's Office, Aug. 20, 1850.

I hereby certify that that the above is a correct copy of the notice of the General Election to be held on Tuesday succeeding the first Monday of November next, received this day from the Hon. Christopher Morgan, Secretary of State.

THOMAS CARNLEY,
Sheriff of the City and County of N. York.

N. B. All the public newspapers within this county will please publish this notice once in each week until the election, and send in their bills for advertising the same as soon as the election is over, so that they may be laid before the Board of Supervisers and passed for payment.

Nashua Iron Co.,

NASHUA, NEW HAMPSHIRE.

MANUFACTURERS of Bowling. Pembroke and Lowmoor Locomotive Tires, Engine Frames, Crank and Car Axles, Wrought Iron Shafting of all sizes, Shapes of all descriptions used in Machine shops and upon Railways.

FRANKLIN MONROE, Treasurer.

Messrs. Fullerton & Raymond, Agents, Boston.
" Raymond & Fullerton, " New York.

Orders received by the Treasurer at Nashua, N.H., or by the Agents in Boston or New York.

Emerson's Patent Ventilator,

ADAPTED to Cars, Engine houses, Public Halls, Factories, Churches, School Houses, Dwellings, Chimney Flues, etc.

This Ventilator is stationary, and cannot get out of order. It is constructed in such conformity to certain ascertained laws of pneumatics, as to insure a constant draft outward, whatever may be the changing direction of the wind. The Massachusetts Mechanic Association have awarded a gold medal to the Inventor, and the Manufacturers have already disposed of over 3,000 of the article. Manufactured and sold by

CHILSON, ALLEN, WALKER & Co.,
351 Broadway, New York.

To Civil Engineers.

WANTED—A Practical Engineer, to be concerned in an Enterprise (a valuable Cannel Coal Mine) that will prove of great advantage to him, as well as those to be associated with him. A preference will be given to one possessing some means, to aid in the completion of the works now in progress, and to take an interest in the stock of the company, already incorporated. Communications addressed to B.G.L. at this office, with real name and address, will meet with immediate attention.

October 3, 1850. 4t40

Great Work on Bridge Building, etc., etc.

JUST published in medium folio, One Dollar, 75 cts. to subscribers.

Part II of a "THEORETICAL AND PRACTICAL TREATISE ON THE CONSTRUCTION OF BRIDGES IN STONE, IRON AND WOOD," including the Equibrium of Arches, the mathematical principles of the Oblique Arch, Suspension Arch, etc., Construction of Foundations in Water, Centering, Oblique Arches, etc., the application of Iron to Railroad Structures, Practical Tunnelling, Suspension Bridges, etc.; illustrated by numerous accurately executed Plans. Elevations, Sections and Details of Stone, Iron and Wood Bridges, Viaducts, Tunnels, Culverts, Machines, etc., constructed by the most eminent Architects and Engineers in Europe and the United States, and numerous Original Designs for Bridges, Viaducts, Culverts, etc. The whole calculated to meet the exigencies of Engineers, and assist Draughtsmen, Bridge Builders, Mechanics and Students. By George Duggan, Architect and Civil Engineer.

The present part contains beautifully executed plans, elevations, sections, and details of the Cast Iron Oblique Arch, 100 feet span, constructed on the system of M. Polonceau, over the Canal St. Denis, Gt. Northern R.R. of France, also plans, elevations, sections and details of a Timber and Iron Truss, 74 feet span, from St. Mary's Viaduct, Cheltenham and Great Western R.R., England, and a Wrought Iron Girder Bridge, 120 feet span, constructed for the London and Blackwall R.R., with the conclusion of the introductory article on the relative merits of the various forms of construction adopted, and materials employed, as regards economy, strength and durability.

Published by George Duggan, 300 Broadway, New York, to whom all communcations should be addressed and subscriptions forwarded.

☞ Parties remitting Mr. Duggan $5. and the remainder $4 when they have been supplied with the first six parts of the "Theoretical and Practical Treatise on Bridge Building, etc.." shall receive it monthly as published. To those making Mr. Duggan a present remittance of $9, the work will be forwarded post free to any part of the United States.

Railroad Iron.

THE Undersigned are prepared to contract for the delivery of superior make Welsh Railroad Iron of the favorite brand "Aberdare."

JOSEPH BRAMWELL & CO.,
40 91 Wall street.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

Bowling Tire Bars.

40	Best Flange Bars	5½x2	inches,	11 feet long.
40	"	5½x2	"	7 feet 8 in. long.
40	" Flat "	6x2	"	11 feet long.
40	"	6x2	"	7 feet 8 in. long.

Now in store and for sale by

RAYMOND & FULLERTON,
45 Cliff street.

Notice to Contractors.

CENTRAL OHIO RAILROAD.

SEALED PROPOSALS for the Graduation and Masonty of 36 miles of the Central Ohio Railroad, extending from the 24th section—three miles east of Newark to the City of Columbus—will be received until the 1st day of November next.

Also for the Bridging (being about 1200 lineal ft.) for the whole line from Zanesville to Columbus.

Also, for 55,000 White Oak Cross Ties, deliverable along the line from Zanesville to Newark before the first day of May, 1851.

Also, for 72,000 White Oak Cross Ties, deliverable along the line from Newark to Columbus before the 1st of August, 1851.

Contractors proposing for the construction of Bridges may propose for plans furnished by themselves, as well as those furnished by the Engineer.

The line will be ready for examination by the 10th of next month (October.)

The bids will be received at the office of the Engineer in Newark, where plans will be exhibited, and specifications furnished.

Contractors unknown to the undersigned must produce satisfactory testimonials.

The amount of work involved in this letting is well worthy the attention of enterprising contractors.

By order of the Board.

ROBERT MAC LEOD Chief Engineer.

Zanesville, Sept. 24, 1850.

P.S. A large number of laborers would find immediate employment and fair wages upon the portion of the line now under contract.

To Contractors.

ALABAMA AND TENNESSEE RIVER R. R.

SEALED Proposals will be received by the Directors of the Alabama and Tennessee River Railroad, at their office in Selma, until the 1st of November next, for the graduation, masonry and bridging of 56 miles of the Southern Division of said road, extending northwardly from Selma.

Plans and profiles may be inspected and specifications and information will be given at the office of the company in Selma, on and after the 15th of October next.

Twenty-six miles of this division were graded in 1839. This part of the division will require repairs to the road bed, and will be furnished anew with culverts and bridges.

The country embraced in this division is healthy, well watered, and possesses facilities for obtaining supplies of provisions.

Proposals may be based upon cash payments, or upon payments of a proportion, or of the whole of the work in stock.

The Directors reserve to themselves the right to accept or reject proposals as they may think proper for the interests of the company.

The Directors expect to have as much as twenty miles of the Northern Division, extending northwardly from the Coosa river in Shelby county, ready for examination by the 15th November, and for letting by the 1st December; and 30 miles more, ready for examination by the 1st and for letting by the 15th of January, 1851. It is likewise their intention to let out the grading, masonry and bridging of the remainder of the Southern Division and of the Northern Division terminating at Gadsden, with all possible despatch.

By order of the President and Directors.

LEWIS TROOST, Chief Engineer

Selma, Ala., August 30, 1850.

Rosendale Cement.

THE NEWARK AND ROSENDALE LIME AND CEMENT CO. are now manufacturing at their works in NEWARK, N. J., and Ulster county, N.Y., a very superior article of *Hydraulic Cement*—also Lime Calcine Plaster, etc. Contractors and dealers will find it to their advantage to call or make application before purchasing elsewhere. All communications addressed to the subscriber, at Newark, N.J., will be punctually attended to.

1y*18 **HENRY WILDE, Secretary.**

ENGINEERS.

Atkinson, T. C.,
Alexandria and Orange Railroad, Alexandria, Va.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W, H,,
Engineer and Surveyor, St. Louis, Mo.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River, Lake Superior.

Hewson, M. Butt,
Memphis, Tenn.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Prichard, M. B.,
East Tennessee and Georgia R. R., Cleveland, Tenn.

Roebling, John A.,,
Trenton, N. J.

W. Milnor Roberts,
Bellefontaine and Indiana Railroad, Marion, Ohio.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Sanford, C. O.,
South Side Railroad, Virginia.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Sours, Peter,
Rahway, New Jersey.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trautwine, John C.,
Panama Railroad—Address through office of Panama Railroad Co., 78 Broadway, N. Y.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Troost, Lewis,
Alabama and Tennessee Railroad, Selma, Ala.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

HOTELS.

Exchange Hotel,
Adjoining Eastern Railroad Depot,
BUFFALO, N. Y.
BY.....FISK & SPERRY,
Late of Delevan House, Albany.

J. D. Abraham, *Architect,*
NO. 300 *MAIN STREET,*
BFFFALO, N. Y.

Fountain Hotel,
LIGHT STREET, BALTIMORE,
P. THURSTON.....Proprietor.

DUNLAP'S HOTEL,
On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

MANSION,
Corner of Maine and Exchange Streets,
P. DORSHIMER. BUFFALO.

GUY'S
United States Hotel,
(Opposite Pratt street Railroad Depot,)
BALTIMORE.
JOHN GUY. WILLIAM GUY.

American Hotel,
Pratt street, opposite the Railroad Depot,
BALTIMORE.
HENRY M. SMITH.....Proprietor.
Late of the Exchange & St. Charles Hotels, Pittsburg.

Washington Hotel,
BY JOHN GILMAN,
$1 *Per Day.*
No. 206 Pratt street, (near the Depot,)
BALTIMORE.

Barnum's City Hotel,
MONUMENT SQUARE, BALTIMORE.
This Extensive Establishment, erected expressly for a Hotel, with every regard to comfort and convenience, is situated in the centre and most fashionable part of the city, and but a few minutes' walk from the Railroad Depots and Steamboat Landings.
The House has lately undergone a thorough repair, embracing many valuable improvements, and will accommodate 250 Guests. BARNUM & CO.

JONES' HOTEL,
NO. 152 CHESTNUT STREET,
PHILADELPHIA.
BRIDGES & WEST, ... Proprietors.

BUSINESS CARDS.

Lithography.
JOHN P. HALL & CO.,
161 Main st., Buffalo, (Commercial Advertiser Build.)
Are prepared to execute all kinds of Lithography in good stole and at reasonable rates. Particular attention wil be paid to Engraving Railroad Maps, Engineer's Plans and drafts, etc., and orders in this line are respectfully solicited.

J. T. Hodge
Will attend to the examination of mining tracts near Lake Superior, and prepare Reports and Maps.
Address, during the Summer,
[Ontanagon Postoffice, Lake Superior.

Cumberland Steam Coal,
FROM THE
FROSTBURG MINES, MD.
H. A. TUCKER,
Agent of Frostburg Coal Co.
No. 50 *Wall Street, New York.*

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Charles T. Jackson, M. D.,
STATE ASSAYER, late Geologist to Maine, Rhode Island, New Hampshire, and the United States, offers his services to his friends and the public in making any Chemical, Mineralogical or Geological researches that may be required for the improvement of Agriculture and the Manufacturing Arts. Particular attention wili be paid to the exploration of mines and to assaying of ores of the metals.
State Assayer's office, 31 Somerset st.
Boston Sept. 3, 1850.

To Railroad Companies and Mechanical Establishments.
A Person of considerable experience and practical knowledge in Mechanical, Civil and Marine Engineering, is anxious to meet with an engagement with either a Private Individual or Public Company, who may have works either to design or execute in the above branches of the Engineering Profession.
Address Z. Y., 47 Atlantic st., South Brooklyn, L.I.

STEEL AND FILES.
R. S. Stenton,
20 CLIFF STREET, NEW YORK,
AGENT FOR
J. & RILEY CARR,
BAILEY-LANE WORKS, SHEFFIELD,
Manufacturers of Cast, Shear, German, Blister, and
Spring Steel,
Of all descriptions, *Warranted* Good.
FILES.
Manufacturers of Machinists' Warranted Best Cast Steel *Files*, expressly for working upon Iron and Steel, made very heavy for recutting.
☞ A full Stock of *Steel* and *Files* at all times on hand. 6m4

Walter R, Johnson,
CIVIL AND MINING ENGINEER AND ATTORNEY for Patents. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED —'Potomac' and other good brands of Pig Iron.

Cop Waste.
CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly an hand and for sale by
KENNEDY & GELSTON,
5½ Pine St., New York.
October 27, 1849, 3m

PLUSHES
FOR
Railway Cars & Omnibuses.
F. S. & S. A. MARTINE,
112 WILLIAM ST., NEAR JOHN.

ARE now receiving a large and complete assortment of Plain and Figured PLUSHES, of their own importation, which will be sold at the lowest market price, viz: Crimson, Maroon, Scarlet, Green, Blue, Purple, etc.

ALSO—CURLED HAIR, the best manufactured in market.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.

July, 27, 1849.

James Herron, *Civil Engineer*,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.

May 16, 1849.

Manufacture of Patent Wire ROPE AND CABLES,
For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tillers, &c., by
JOHN A. ROEBLING, Civil Engineer,
TRENTON, N. J.

Doremus & Harris,
ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.
☞SCHOOL OF CHEMISTRY.☜

To Engineers and Surveyors.
E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

FORGING.
Ranstead, Dearborn & Co.,
MANUFACTURERS OF
LOCOMOTIVE CRANKS AND CAR AXLES,
ALSO
WROUGHT IRON SHAFTING,
And All Kinds of Hammered Shapes.
Office 25 Foster's Wharf, Boston.

Henry I. Ibbotson,
IMPORTER of Sheffield and Birmingham Goods. Also, Agent for the Manufacture of Telegraph Wire. 218 PEARL ST., NEW YORK.

Cumberland, (Md.,) Coals for Steaming, etc.
ORDERS RECEIVED FOR AND FILLED by J. COWLES, 27 Wall St., N. Y.

Samuel D. Willmott,
MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,
—AND FILES—
IMPORTER OF THE
GENUINE WICKESRLY GRINDSTONES
NO. 8 LIBERTY STREET,
NEW YORK.

Railroad Instruments.
THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by
E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

IRON.

Car Wheel Iron.
100 Tons "Columbia" No. 2 Cold Blast Charcoal Iron.
300 Tons "Salisbury" No. 1, do. do.
For sale by CHARLES T. GILBERT,
No. 80 Broad st.
New York, Sept. 21, 1850.

Railroad Spikes.
THE subscribers are prepared to make and execute contracts for Railroad Spikes of a superior quality, manufactured by the New Jersey Iron Company, at Boonton. DUDLEY B. FULLER & CO.
139 Greenwich st. corner of Cedar.

Railroad Iron.
FOR SALE—500 Tons of superior flat bar Railroad Iron, two and a half by three-fourths—which has been in use on the Cumberland Valley Railroad for about three years. For terms apply to Henry J. Biddle, Esq., Philadelphia, or to FREDK. WATTS,
President of the Cum. Val. R.R., Carlisle, Pa.
Carlisle, Sept. 17, 1850.

Railroad Iron.
1650 Tons, weighing about 61 lbs. per yard, 40 tons, weighing about 52 lbs. per yard, and 825 tons, weighing about 53½ lbs. per yard, of the latest and most approved patterns of T rail, for sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Aug. 26, 1850.

N.B.—B., J. & Co are also prepared to take contracts for English rails, delivered in any of the Atlantic ports of the United States.

Railroad Iron.
THE Undersigned, Agents for Manufacturers, are prepared to contract to deliver Rails of superior quality, and of any size or pattern, to any ports of discharge in the United States.
COLLINS, VOSE & CO.,
74 South St.
New York, June 1, 1850.

Railroad Iron.
1,500 Tons weighing 58 lbs. per lineal yard.
500 " " 57 " "
500 " " 56 " "
500 " " 60 & 61 lbs, "
Also 2½x½ flat rails. All the above being of approved patterns. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.

N.B.—Rails imported on commission, or at a fixed price.

Iron.
Pig Iron, Anthracite and Charcoal; Boiler and Flue Iron, Spring and Blistered Steel, Nail Rods, Best Refined Bar Iron, Railroad Iron, Car Axles, Nails, Stove Castings, Cast Iron Pipes of all sizes, Railway Chairs of approved patterns' for sale by
COLEMAN, KELTON & CAMBELL,
109 N. Water St., Philadelphia.

Railroad Iron.
THE UNDERSIGNED, HAVING made arrangements abroad, are prepared to contract for the delivery of Foreign rails, of approved brands upon the most favorable terms.

They will also make contracts for American rails, made at their Trenton works, from Andover Iron, in whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and Market Wire; Braziers and Wire Rods; Rivets and Merchant Bars to order, all made exclusively from Andover Iron. The attention of parties who require iron of the *very best* quality for special purposes, is respectfully invited. COOPER & HEWITT,
17 Burling Slip, New York.
February 15, 1850.

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for sale by GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.
JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, o Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Brother, Baltimore, Md.

LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM ONE AND A QUARTER TO SEVEN INCHES IN DIAMETER.

THE ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.
THOMAS PROSSER & SON, Patentees,
28 Platt street, New York.

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
73 New street,
February 3, 1849. New York.

Iron Store.
THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*
Troy, N.Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phœnix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehannah river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.
45 North Water St. Philadelphia.
March 15, 1849.

Tredegar Iron Works.

ROLLING MILL FOUNDRY AND MACHINE SHOPS. The undersigned continues to manufacture at his Works in this city (from best charcoal metal) Bar Iron of every description, embracing—Rounds and Squares, from 1¼ to 5 inches diameter.
Flats, from ¾ to 7 inches, all thicknesses.
Bands and Scrolls, all sizes. Boiler plate and Plough Iron. Railroad and Locomotive Axles and Tires. Locomotive Frames, Spikes and Plates. Hoops, Ovals, Half Ovals, Half Rounds, Angle, T, L, and indeed every description of Iron usually manufactured, all of which he warrants to be equal to any made in this country. He also manufactures at his Foundry and Machine Shops all descriptions of Railroad Work, say, Locomotives, Railroad Wheels and Axles complete and ready for the road, Railroad Chairs, etc. Also, Marine and Stationary Engines all sizes, Sugar mills and Engines, Horse mills, and every kind of Machinery usually required for the operations of the country. He has paid particular attention to getting up machinery, etc., for Gold Mine operations, and those in want of such work might find it to their advantage to give him a call. J. R. ANDERSON.
Richmond, Va., Sept. 10, 1850.

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by FISHER, MORGAN & CO.,
75 N. Water St., Philadelphia.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by
ICHABOD WASHBURN.
Worcester, Mass., May 25, 1849.

Wheel, Forge and Foundry Iron.

LOCUST GROVE Wheel Iron of great strength and superior chilling property.
Balt. Charcoal Forge Iron, from Patuxent, Curtis Creek and Gunpowder furnaces.
Elkridge Foundry Iron, of superior strength and softness. Anthracite and Charcoal Iron from Pennsylvania and Virginia. Gas and Water Pipes, Lamp Posts from Elkridge furnace.
LEMMON & GLENN,
6m9 62 Buchanan's Wharf, Baltimore.

S. S. Keyser & Co., IRON WAREHOUSE,

Corner of South and Pratt Streets,
BALTIMORE, MD.
Selling Agents for the Rough and Ready Bar Iron and Elk Boiler and Flue Iron Rolling Mills, Sarah and Taylor Furnaces, and Wrightsville Hollow Ware Foundry, and Dealers in Bar and Sheet Iron, and Cast, Sheer, German, Blister, Spring and Electerised Steel, etc., etc.

Smith & Tyson,

GENERAL COMMISSION MERCHANTS,
No. 25 South Charles St., Baltimore, Md.
AGENTS for the Celebrated Columbia Pig Iron, suitable for Car Wheels and Chilled Rolls.
Columbia refined Charcoal Blooms; Refined Charcoal Juniatta Billet Iron for Wire; Refined Iron for Bridging, of great strength; Cut Nails, Spikes, and Brads; Railroad Spikes and Wrought Chairs. 22tf

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Stickney & Beatty,

DEALERS IN IRON AND IRON MANUFACTURERS.

AGENTS for the Balt. City Rolling Mill, from which establishment they are prepared to furnish Ellicott's round, square, and flat bar iron, puddled and charcoal boiler plates and billet iron—also agents for the sale of the Laurel and Maryland (Balt.) charcoal forge pig irons, Balt. hard iron for chilling wheels, anti-Eatam nails, Catoctin foundry iron, boiler blooms from the Caledonian works, Wm. Jessop & Son's cast steel, Coleman's blister steel and nail rods, hoop, band, sheet, oval and common English iron.
Nos. 18 and 20 South Charles st., Baltimore.

Railroad Iron.

CONTRACTS made by the subscribers, agents for the manufacturers, for the delivery of Railway Iron, at any port in the United States, at fixed prices, and of quality tried and approved for many years, on the oldest railways in this country.
RAYMOND & FULLERTON, 45 Cliff st.

IRONDALE PIG METAL, MANUFACTURED and for sale by the Bloomsburg Railroad Iron Co.
LINDLEY FISHER, Treasurer.
75 N. Water St., Philadelphia.

Railroad Iron.

2000 Tons, weighing 58 pounds per lineal yard, of the most approved pattern of T rails, in store and to arrive, for sale by
COLLINS, VOSE & CO.,
74 South St.
New York, June 1, 1850.

Railroad Iron.

3,000 TONS C. L. MAKE 63½ lbs. per yard, now landing and to arrive.
Also contracts made for future delivery of above superior make English Iron.
300 Tons Banks Best Iron, Round, Square and Flat.
200. " English Bar " " " "
10 " 9-16 Square Iron for Railroad Spikes.
For sale in lots to suit purchasers by
DAVID W. WETMORE.
New York, March 26, 1850. 3m

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.
All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS,
91 John street, New York.
Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

JOHNSON, CAMMELL & Co's Celebrated Cast Steel,

AND

ENGINEERING AND MACHINE FILES,

which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.
JOHNSON, CAMMELL & CO.,
100 William St., New York.
November 23 1849.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract for the delivery of English, Welsh and Scotch Rails, of any pattern and weight, also for every description of English, Welsh, Scotch, and Swedish Iron, Railway Chairs and Spikes, Rivets, Bolts, Nuts, Washers, Chain Cables, Anchors, Tin Plates, German Spelter, Iron Castings, and every description of Machinery.
WILLIAM BIRD & CO.,
Iron and Tin Plate Merchants,
44 Wall st., New York.
And at 5 Martin's Lane, City, London,
and 140 Buchanan st., Glasgow.
July 27th, 1850.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.
F. & T. TOWNSEND.
Albany, August 18, 1849,

Railroad Iron.

B. O. Railway Tires, Railway Wheels,
Scotch Pig Iron, Tin Plates and Banca Tin,
Muntzs Patent Metal Sheathing,
Baltimore Copper.
Contracts for Rails made on behalf of the manufacturers, for delivery at any ports in the United States, at fixed prices.
Bowling Tires and Tire Bars and Scotch Pigs imported to order.
Muntz's Ship-sheathing, and a general stock of Tin Plates and Banca Tin in store, and for sale by
RAYMOND & FULLERTON, 45 Cliff st.

Bowling Iron. Stamped B.O.

Railway Tire Bars	Rivet Iron
Locomotive and other Axles	Locomotive Frame do
Boiler Plates	Bars,

and every other description of this superior Iron.
The subscribers, agents for the sale of Bowling Iron, are prepared to execute orders for importation, especially for railway and machinery uses, with despatch from the manufacturers.
RAYMOND & FULLERTON, 45 Cliff st.

Lovegrove's Patent Cast Iron Water and Gas Pipes.

THE Subscriber, the Inventor and Patentee of the Centrifugal mode of giving form to metallic substances while in a molten state, is preparing to make Cast Iron Water and Gas Pipes, of any dimensions, at prices much lower than they can be made in the old manner, and the pipes warranted to stand a pressure of three hundred pounds to the square inch, and to be soft enough to drill. Steam Engines and all kinds of machinery. Cast Iron Doors and Frames, and Mill Castings of every description, made to order.
THOMAS LOVEGROVE,
Machinist and Founder,
West Falls Avenue, below Pratt st., Baltimore.

Ray's Patent India Rubber Car Springs.

Savannah, Ga., May 22, 1850.

FOWLER M. RAY, Esq.,
Dear Sir: I have no hesitation in saying, after having used on our road your springs and Fuller's, that I consider yours decidedly the best in every particular, and in this opinion I am sustained by all our officers. Fuller's spring has a tendency to split, and also to chafe or abrade by the constant friction on the cast iron plates or disc: and in my opinion is not near so elastic as yours.
Your springs, which have been in use on our road for 12 or 15 months past, and in constant use under both passenger and freight cars, are to all appearances as elastic, sound and good, as when first put in use.
We are now building eigty-five new cars, of which for fifty-sets the springs have been ordered of you.
GEORGE A. ADAMS,
Master Carpenter,
Central Railroad and Banking Co. of Georgia.

—

Connecticut River Railroad Office,
Northampton, May 4, 1850.

E. CRANE, Esq.,
Dear Sir: It is now about two years since I first tried the experiment of using a set of Ray's India-rubber Springs upon one of our merchandise cars, and although the car has been in constant service since that time, I do not on examination find the slightest difference either in the thickness or elasticity of the material.
The same result has followed wherever we have applied them, either for wheel or draw springs on Engines, Tenders or Cars. At present we use no other; either in replacing old springs or building new cars—and I am perfectly satisfied that for economy, durability, safety, and ease of motion, that Ray's India-rubber is the best article for Springs which has been presented to the public.
Yours respectfully, J. HUNT,
Supt. Connecticut River Railroad.

—

EDWARD CRANE, Esq.,
Dear Sir: Having applied to cars of the Boston and Worcester Railroad Corporation, Ray's Vulcanised Rubber Springs (where they have been in use for some two years last past), I have had occasion to observe their operation, and am free to say in answer to your inquiries, that they retain their *elasticity* perfectly during all changes of atmospheric temperature: and are in my opinion a most valuable acquisition to Railroad Cars—are not liable to derangement, as is the case with steel springs; while at the same time it costs less to apply them. Respectfully yours,
D. N. PICKERING,
Supt. Motive Power, Bost. & Wor. Railroad.
Boston, April 15th, 1850.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phœnixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has give universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll sounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery *for making Spikes*, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

CHILLED RAILROAD WHEELS.—THE UNdersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

Brown's Old Established SCALE WARE HOUSE,

NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales of every description, respectfully asks the attention of Railroad Companies to his Improved Wrought Iron Railroad Track and Depot Scales which for strength, durability, accuracy, convenience in weighing, and beauty of workmanship, are not surpassed by any others in this country.

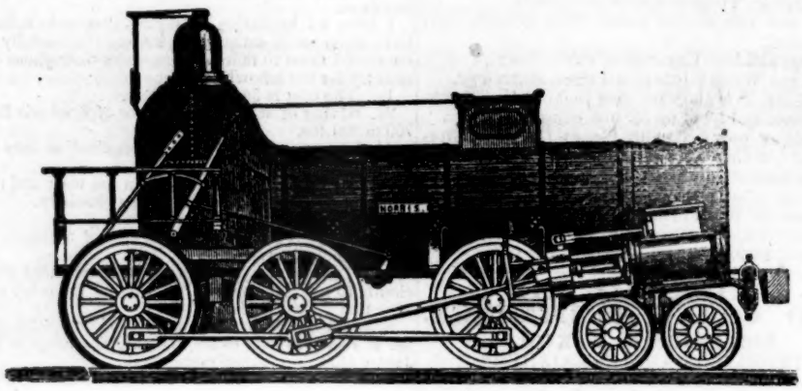
He is aware that this is rather a bold assertion for him to make, yet he can say with confidence that they have but to be tried to give them precedence over all others. J. L. BROWN.

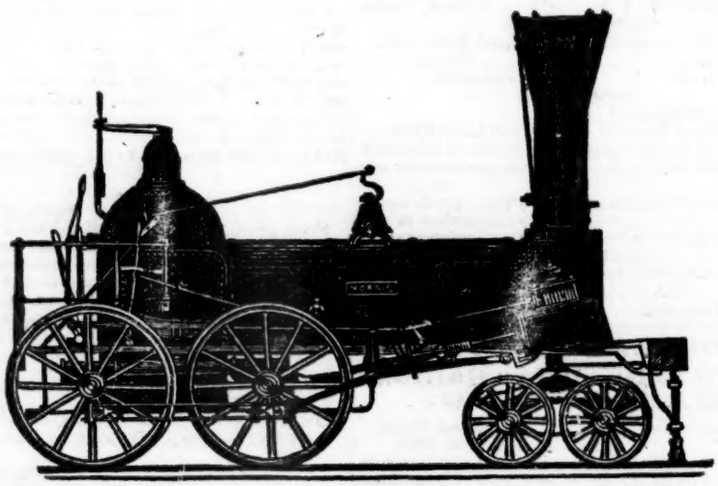
☞ Bank Scales made to order, and all Scales of his make Warranted in every particular.

References given if required

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,





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Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

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Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tires are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general asssortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

Etna Safety Fuse.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,
☞ *Sole Manufacturers,* ☜
No. 85 Liberty St.
NEW YORK.

And in the principal cities and towns in the U. States.

☞ The Premium of the AMERICAN INSTITUTE was awarded to the *Etna Safety Fuse* at the late Fair held in this city.

November 3, 1849. 1y

COLUMBUS, OHIO,

Railroad Car Manufactory. RIDGWAYS & KIMBALL,

HAVE established at this central point, the manufacture of Passenger, Freight, Gravel and Hand Cars for Railroads, and assure all Western Railroad Companies that it will be their constant aim to procure the best materials and workmen, and to turn out the best kind of work at fair prices. Specimens may be seen on the Columbus and Xenia Railroad. The patronage of Railroad Companies is respectfully solicited. 1y8

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